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TREND OF DISABLING SICKNESS AMONG EMPLOYEES OF A PUBLIC UTILITY¹

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This paper is the third presented in a study of absences on account of disability among employees of the Edison Electric Illuminating Co. of Boston.² Its purpose is to ascertain whether the frequency of disability exhibits an increasing, decreasing, or stationary tendency, and what the trend is of specific disease groups among employees of a company which maintained a medical department throughout the period under review.

Very little information is available concerning the trend of sickness in this country, except for certain reportable diseases. Studies of the extent and nature of illness in different communities have been made either as of a given date, such as the sickness surveys of the Metropolitan Life Insurance Co., or, like the Hagerstown morbidity studies of the Public Health Service, have covered a period too short to afford satisfactory information as to the general trend of sickness frequency and severity. A continuous record of disabilities in an industrial group which averaged 2,510 persons over an 11-year period, among whom occurred during this time 39,527 absences on account of disability, about 75 per cent of which were investigated either by a physician or nurse in the employ of the company, is of interest from the standpoint of the possibilities afforded for measuring progress, or the lack of it, in the prevention of sickness severe enough to cause absence from work for one full working day or longer.

A record of disabilities among its employees was inaugurated by the Edison company in January, 1913, at which time liberal sick-leave provisions were granted.³ During the first four years of the new plan, especially in 1913 and 1914, the frequency of disability

¹ From the Office of Industrial Hygiene and Sanitation in cooperation with the Office of Statistical Investigations of the United States Public Health Service.

² The first two reports were "A Ten Year Record of Absences from Work on Account of Sickness and Accidents," Public Health Reports, vol. 42, No. 8 (Feb. 25, 1927), pp. 529-550 (Reprint No. 1142); and "Sickness Among Persons in Different Occupations of a Public Utility," Public Health Reports, vol. 43, No. 6 (Feb. 10, 1928), pp. 314-335 (Reprint No. 1207.)

³ The sick-leave provisions of the company are given on page 3 of Reprint No. 1142 mentioned in footnote 2.

increased, probably because the employees prior to 1913 had developed the habit of attempting to carry on as long as they could when physically indisposed in order to prevent the loss of wages which absence entailed, and only slowly broke away from such a habit after the granting of sick leave. By 1917 the disability rates appear to have become stabilized at a higher level, and observation of the trend of sickness frequency was considered practicable beginning with that year.

TREND OF MORTALITY IN RECENT YEARS

The general trend of death rates has been downward in the period covered by the present study (1917 to 1927). Not only has mortality

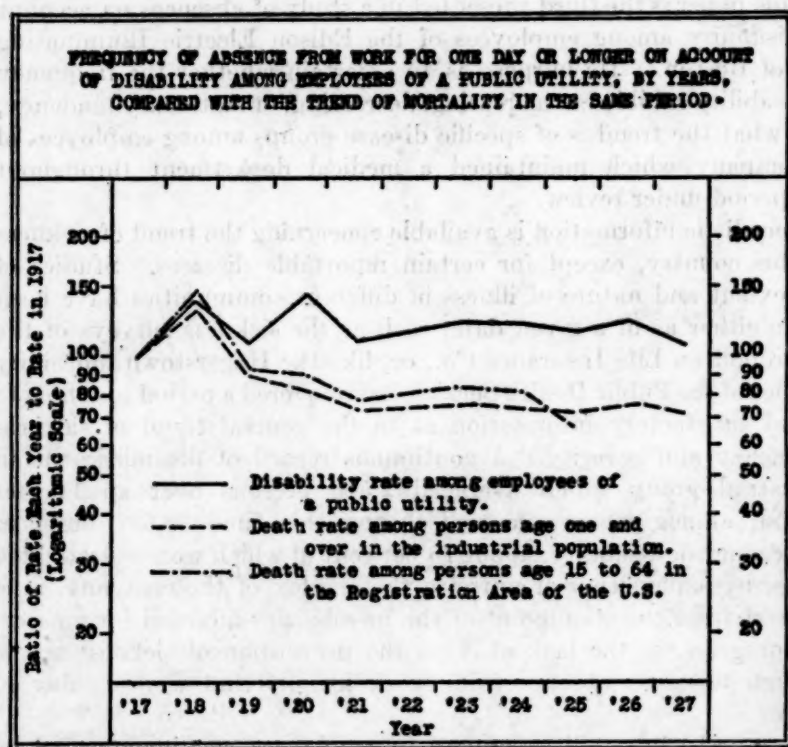


Fig. 1.

decreased since 1917 among persons aged 1 year and over in the families of persons employed in industry, as shown by the records of the industrial department of the Metropolitan Life Insurance Co., but the death rate of persons at the working ages (15 to 64) in the registration area of the United States has also declined considerably during the past decade. Different writers have ventured the opinion that declining death rates have not been accompanied by corresponding decreases in the amount of sickness experienced. Although the trend of disability in a group of 2,500 employees can not, of course, be regarded as typical of the sickness experience either of the general

or of the industrial population of the country, it may be a straw affording an indication as to the general direction of the wind. In the industrial group under study the frequency of absence from work for one day or longer on account of disability from all causes combined shows little evidence of a declining tendency.

TABLE 1.—*Frequency of absence from work for one day or longer on account of disability among employees of a public utility, by years, compared with the trend of mortality in the same period*

Year	Ratio of rate each year to rate in 1917			Number of absences for one day or longer on account of disability per 1,000 employees of a public utility	Number of deaths per 1,000 persons age 1 and over, insured in industrial department of Metropolitan Life Insurance Co.	Number of deaths per 1,000 persons age 15 to 64 in the registration area of the United States
	Rate of absence for one day or longer on account of disability among employees of a public utility	Death rate per 1,000 age 1 and over, industrial department of Metropolitan Life Insurance Co.	Death rate per 1,000 age 15 to 64 in the registration area of the United States			
1917.....	100.0	100.0	100.0	1,204	11.61	10.00
1918.....	146.1	134.3	149.5	1,759	15.59	15.06
1919.....	109.8	91.6	94.4	1,322	10.63	9.52
1920.....	142.1	85.2	91.6	1,711	9.80	9.24
1921.....	110.0	75.0	78.7	1,324	8.71	7.94
1922.....	118.1	76.1	81.1	1,422	8.83	8.18
1923.....	122.0	77.3	83.6	1,469	8.97	8.44
1924.....	121.3	73.0	82.1	1,400	8.48	8.28
1925.....	117.5	72.9	67.9	1,415	8.46	6.85
1926.....	121.3	76.3	-----	1,461	8.86	-----
1927.....	107.1	72.4	-----	1,289	8.40	-----

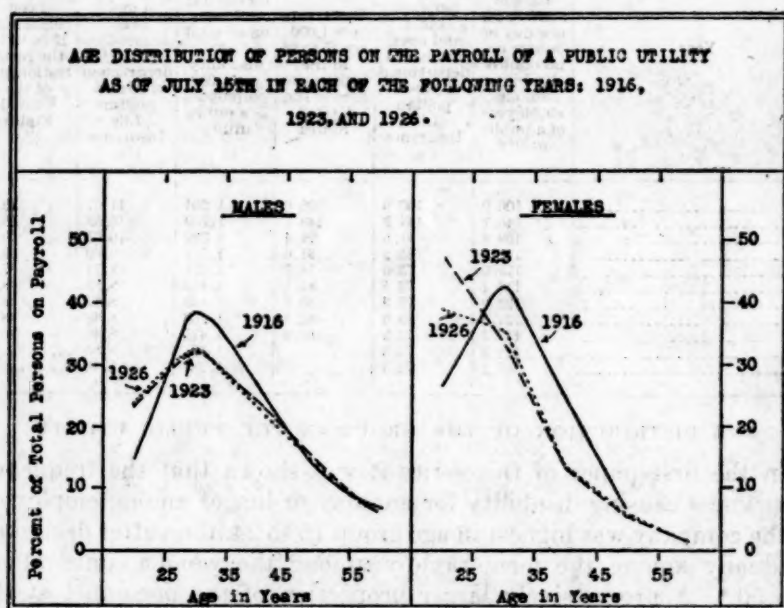
AGE DISTRIBUTION OF THE GROUP IN THE PUBLIC UTILITY

In the first paper of this series it was shown that the frequency of sickness causing disability for one day or longer among employees of the company was highest in age group 15 to 24, thereafter declining, gradually among the men, rapidly among the women, until about age 50.⁴ A progressively larger proportion of the personnel at the younger ages would therefore tend to raise the disability rate in the latter part of the period. For this reason the age distribution of persons on the pay roll of the company at three different times in a 10-year period is presented in Table 2 and Figure 2. Among both males and females the years 1923 and 1926 show a larger proportion of the personnel at ages 15 to 24 than occurred at the beginning of the period, but a smaller proportion of the population between the ages of 25 and 45 during the latter part of the period than in 1916, with negligible differences after age 45. Thus the effect of the larger percentage of persons below age 25 in 1923 and 1926 compared with 1916 would be largely offset by the smaller proportion at ages 25 to 45 in these later years. Changes in the age distribution of persons on the pay roll apparently were not of such a nature as to affect in any important way the course of the disability rates from 1917 through 1927.

⁴ Reprint No. 1142 from the Public Health Reports, pp. 15-18.

TABLE 2.—Age distribution of employees of a public utility at three different times in a 10-year period

Age group	Males			Females		
	July 15, 1916	July 15, 1923	July 15, 1926	July 15, 1916	July 15, 1923	July 15, 1926
All ages.....	100.0	100.0	100.0	100.0	100.0	100.0
15 to 24.....	15.2	23.4	23.7	26.5	47.2	44.0
25 to 34.....	38.6	32.0	32.8	42.5	33.1	35.4
35 to 44.....	27.5	24.3	23.3	24.1	13.0	13.5
45 to 54.....	11.8	14.0	14.0	6.9	5.2	5.9
55 and over.....	6.9	6.3	6.2	0	1.5	1.2



LABOR TURNOVER IN THE GROUP STUDIED

In the second paper the analysis showed that disability occurred oftener at every age among the newer recruits than among the veteran employees.⁵ As an index of the stability of the labor force, the rate of labor turnover was obtained for each of the years, as shown in Table 3. Except for the first three years, which were part of the war period, the ratios of exits to average number on the pay roll ranged from 16 to 28 per cent. With labor turnover rates so low it appears that changes in the proportion of persons in the service of the company for a relatively short time probably were not of sufficient magnitude to have any important influence upon the trend of disability during the years under review.

⁵ Reprint No. 1207 from the Public Health Reports, pp. 4-10.

TABLE 3.—*Ratio of exits to number on pay roll in each fiscal year ending June 30, 1917 to 1927*

Year	Average number on pay roll during fiscal year	Total exits during fiscal year	Per cent	Year	Average number on pay roll during fiscal year	Total exits during fiscal year	Per cent
1917.....	2,134	1,024	48.0	1923.....	2,577	731	28.3
1918.....	2,059	1,817	88.2	1924.....	2,903	639	22.0
1919.....	1,988	1,022	51.4	1925.....	3,239	744	22.9
1920.....	2,172	595	27.4	1926.....	3,204	729	22.1
1921.....	2,195	354	16.1	1927.....	3,385	564	16.7
1922.....	2,293	386	16.8				

GROWTH IN NUMBER ON THE PAY ROLL

In 1918 a considerable decrease occurred in the average number of male employees of the company compared with the average number in 1917. In each year since 1918, however, the number has been larger than in the preceding year. The female personnel increased year by year from 1917 through 1927. The number on the pay roll each year as shown in Table 4 has been used as the divisor in computing the disability rates in the tables which follow.

TABLE 4.—*Average number of persons on the pay roll of the company, by sex, from 1917 to 1927, inclusive*¹

Year	Males	Females	Year	Males	Females
1917.....	2,038	206	1923.....	2,030	492
1918.....	1,562	365	1924.....	2,273	570
1919.....	1,587	432	1925.....	2,517	647
1920.....	1,064	436	1926.....	2,571	648
1921.....	1,672	437	1927.....	2,626	682
1922.....	1,736	457			

¹ Yearly average obtained from census once a month.

SEVERITY OF DISABILITY IN DIFFERENT YEARS

As a measure of the severity of sickness, the median duration of disability was first considered. It was found, however, that so large a proportion of the cases were of short duration that the median nearly always was either two or three days. The mean duration, although shown in the tables which follow, is not a very useful measure of sickness severity on account of the large weight it gives to the extremely long cases which happen to fall in any given year. The trend in the severity of sickness was therefore observed mainly by ascertaining the frequency of cases of different duration, such as those which lasted one week or less, those lasting 8 days to 2 weeks, 15 days to 4 weeks, and more than 4 weeks. The results have been plotted on semilogarithmic paper in order to facilitate observation

of relative changes in the disability rates. Since an equal distance vertically on the graph represents an equal percentage change, the slope of the line indicates the relative or proportional change in the rate.

Table 5 and Figure 3 reveal the absence of any marked trend in the frequency either of the minor or of the more serious disabilities.

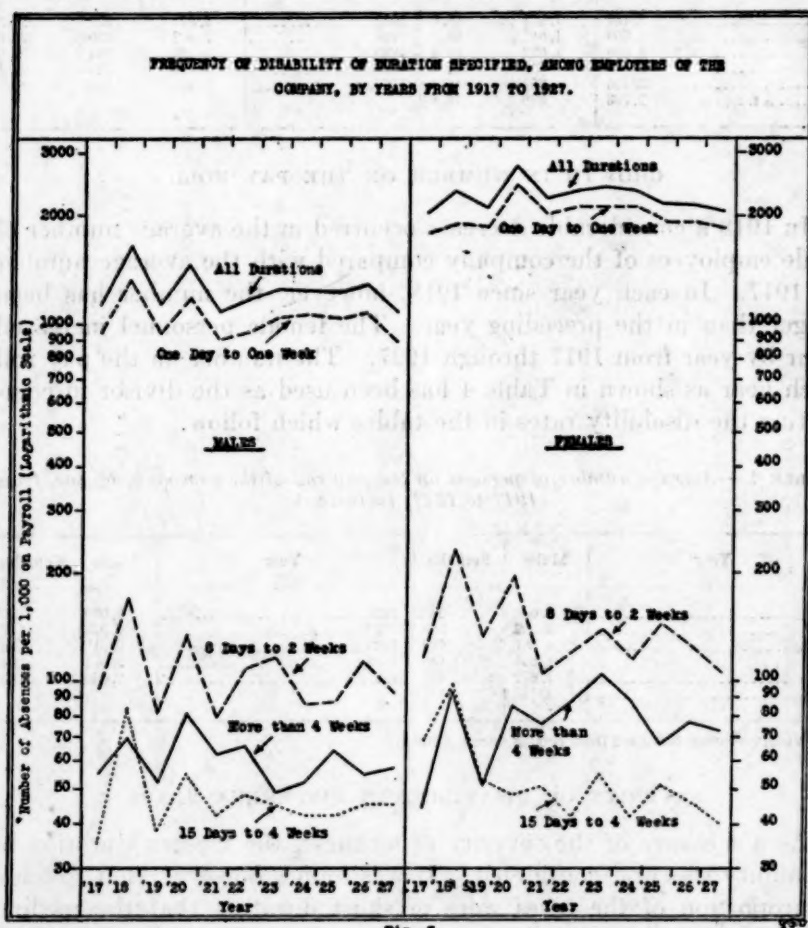


Fig. 3.

The high disability rates in 1918 and 1920, years in which influenza was epidemic, give to some of the curves the appearance of having a slight downward trend, but when allowance is made for these two abnormal years, it is seen that the rates fluctuated from year to year without any definite tendency one way or the other.

TABLE 5.—Frequency of disability¹ of specified duration among employees of the company, by years from 1917 to 1927

Year	Number of absences per 1,000 persons on pay roll for absence of—					Average number of days of disability per absence	Number of absences lasting—				
	One day or longer	One week or less	8 days to 2 weeks	15 days to 4 weeks	More than 4 weeks		One day or longer	One week or less	8 days to 2 weeks	15 days to 4 weeks	More than 4 weeks
MALES											
1917.....	1,120	936	94	35	55	8.0	2,249	1,879	189	71	110
1918.....	1,625	1,303	169	84	69	7.6	2,538	2,035	264	131	108
1919.....	1,110	939	81	38	52	7.4	1,762	1,491	128	61	82
1920.....	1,441	1,173	132	55	81	9.1	2,398	1,952	220	91	135
1921.....	1,084	901	79	42	62	8.5	1,812	1,506	133	70	103
1922.....	1,171	948	109	48	66	8.8	2,033	1,646	190	83	114
1923.....	1,238	1,028	116	45	49	6.3	2,514	2,087	237	91	99
1924.....	1,230	1,050	86	42	52	6.4	2,795	2,386	196	95	118
1925.....	1,220	1,027	87	42	64	6.8	3,071	2,584	218	107	162
1926.....	1,286	1,073	113	45	55	7.1	3,306	2,760	290	115	141
1927.....	1,088	893	93	45	57	8.2	2,857	2,346	244	119	148
FEMALES											
1917.....	2,019	1,791	116	68	44	7.3	416	369	24	14	9
1918.....	2,332	1,902	238	99	93	6.3	851	694	87	36	34
1919.....	2,100	1,864	132	53	51	5.6	907	805	57	23	22
1920.....	2,743	2,417	193	48	85	7.0	1,196	1,054	84	21	37
1921.....	2,243	2,011	105	51	76	6.5	980	879	46	22	33
1922.....	2,374	2,125	120	42	87	5.9	1,085	971	55	19	40
1923.....	2,423	2,124	140	55	104	6.0	1,192	1,045	69	27	51
1924.....	2,377	2,131	116	42	88	5.5	1,355	1,215	66	24	50
1925.....	2,175	1,913	144	51	67	5.4	1,407	1,238	93	33	43
1926.....	2,156	1,906	127	46	77	6.6	1,397	1,235	82	30	50
1927.....	2,062	1,843	106	40	73	6.4	1,406	1,257	72	27	50

¹ Including accidents of both industrial and nonindustrial origin.² Average number of calendar days from date disability began to date of return to work.

Since the story may be different for certain causes of disability, incidence rates were computed for each of the years for different sickness and accident groups, as follows:

1. Industrial accidents.
2. Nonindustrial accidents.
3. Respiratory diseases.
 - a. Diseases of the nasal fossae, bronchitis, influenza and grippe.
 - b. Diseases of the pharynx and tonsils.
 - c. Other respiratory diseases.
4. Diseases of the digestive system.
5. Diseases other than those of the respiratory and digestive systems.
 - a. Rheumatism and the myalgias.
 - b. Diseases of the eyes and ears.
 - c. Diseases of the skin.
 - d. Diseases of the circulatory system and nonvenereal diseases of the genito-urinary system and annexa.
 - e. Other nonrespiratory and nondigestive diseases.

The trend in the frequency of each of these causes of absence from work is considered briefly in the following pages.

TREND OF INDUSTRIAL COMPARED WITH NONINDUSTRIAL ACCIDENTS

An extensive decline in the frequency of disabling industrial accidents among male employees of the company occurred during the period reviewed. The sharpest decreases are indicated for the less severe industrial disablements—i. e., those lasting from one day to one week—but a definitely downward trend is shown also in the year-to-year incidence of the more severe accidents of industrial

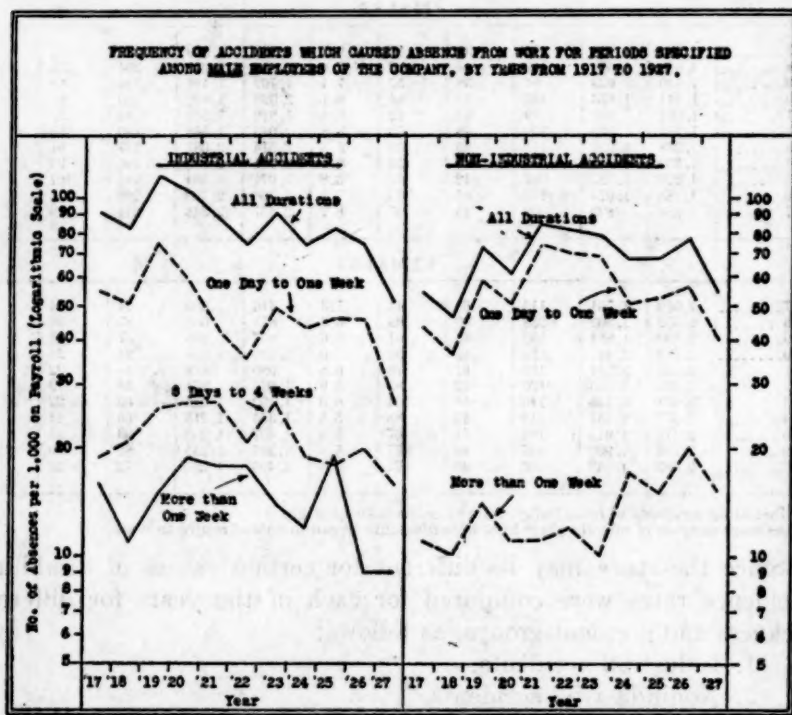


Fig. 4.

origin. For the nonindustrial injuries a favorable trend is not discernible; in fact, the severer accidents of nonindustrial origin appear to be on the increase among the men in the employ of the company. Accident rates for the women are not shown on account of the small number of cases, although the female nonindustrial accident rates were higher than those of the men.⁶

⁶ Comparative frequency of nonindustrial injuries among males and females is shown in Reprint No. 1142 from the Public Health Reports, pp. 8-9.

TABLE 6.—*Frequency of industrial accidents¹ which caused absence from work for periods specified among male employees of the company, by years, from 1917 to 1927*

Year	Number of absences per 1,000 males on pay roll for absence of—				Average number of days of disability per absence ²	Number of absences lasting—			
	1 day or longer	1 day to 1 week	8 days to 4 weeks	More than 4 weeks		1 day or longer	1 day to 1 week	8 days to 4 weeks	More than 4 weeks
1917	91	56	19	16	17.4	182	112	38	32
1918	83	51	21	11	16.0	130	79	34	17
1919	117	76	26	15	14.6	185	120	41	24
1920	106	60	27	19	23.2	176	99	45	32
1921	89	44	27	18	27.3	149	73	46	30
1922	75	36	21	18	25.4	130	62	37	31
1923	91	50	27	14	16.0	185	101	55	29
1924	75	44	19	12	15.4	171	100	44	27
1925	83	46	18	19	18.0	209	115	46	48
1926	75	46	20	9	19.2	193	119	52	22
1927	52	27	16	9	22.4	138	72	43	23

¹ Title numbers 165-203 in the International List of Causes of Death, 3d revision, Paris, 1920.² Average number of calendar days from date disability began to date of return to work.TABLE 7.—*Frequency of nonindustrial accidents¹ which caused absence from work for periods specified among male employees of the company, by years, from 1917 to 1927*

Year	Number of absences per 1,000 men on pay roll for absence of—			Average number of days of disability per absence ²	Number of absences lasting—		
	1 day or longer	1 day to 1 week	More than 1 week		1 day or longer	1 day to 1 week	More than 1 week
1917	55	44	11	8.6	111	88	23
1918	47	37	10	9.3	74	58	16
1919	73	59	14	6.5	116	94	22
1920	62	51	11	10.9	104	85	19
1921	85	74	11	4.1	142	124	18
1922	82	70	12	5.3	143	121	22
1923	79	69	10	5.2	160	140	20
1924	68	51	17	9.4	154	116	38
1925	68	53	15	7.7	172	134	38
1926	77	57	20	9.8	197	147	50
1927	55	40	15	15.0	144	105	39

¹ Title numbers 165-203 in the International List of the Causes of Death, 3d revision, Paris, 1920.² Average number of calendar days from date disability began to date of return to work.

DISEASES OF THE RESPIRATORY SYSTEM

Because respiratory diseases constitute such a large proportion of the disabilities, the graph of disability from all causes presents an appearance similar to that of diseases of the respiratory system. The influenza epidemics caused sharper rises and falls in the respiratory rate than in the rate of absence from all causes of disability, but no important difference in trend is apparent.

TABLE 8.—Frequency of diseases of the respiratory system¹ which caused absence from work for periods specified, among employees of the company, by years from 1917 to 1927

Year	Number of absences per 1,000 persons on pay roll for absence of—				Average number of days of disability per absence ¹	Number of absences lasting—			
	1 day or longer	1 day to 1 week	8 days to 2 weeks	More than 2 weeks		1 day or longer	1 day to 1 week	8 days to 2 weeks	More than 2 weeks
MALES									
1917-----	511	445	42	24	5.1	1,027	895	84	48
1918-----	980	763	122	95	7.8	1,531	1,192	191	148
1919-----	493	435	37	21	5.2	782	690	58	34
1920-----	690	573	72	45	6.3	1,148	953	119	76
1921-----	461	406	33	22	5.0	770	679	55	36
1922-----	594	502	63	29	6.1	1,031	871	109	51
1923-----	648	560	63	25	5.0	1,315	1,137	127	51
1924-----	630	568	43	19	4.2	1,433	1,291	97	45
1925-----	638	569	47	22	4.4	1,605	1,432	118	55
1926-----	731	633	69	29	5.2	1,880	1,627	176	77
1927-----	538	461	48	29	5.7	1,414	1,210	127	77
FEMALES									
1917-----	850	772	58	29	3.4	177	159	12	6
1918-----	1,326	1,036	161	129	6.7	484	378	59	47
1919-----	905	794	76	35	4.2	391	343	33	15
1920-----	1,291	1,124	115	52	6.2	563	490	50	23
1921-----	803	735	24	34	7.7	351	321	15	15
1922-----	1,033	937	55	41	4.8	472	428	25	19
1923-----	1,081	935	89	57	5.7	532	460	44	28
1924-----	981	872	70	39	5.3	559	497	40	22
1925-----	1,011	881	88	42	5.6	654	570	57	27
1926-----	1,062	963	71	48	5.9	701	624	46	31
1927-----	799	698	63	38	5.6	545	476	43	26

¹ Title Nos. 11, 31, 97-107, and 109 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.

The respiratory picture, in turn, is largely determined by the frequency of the common cold, bronchitis, and influenza or grippe. In this group of diseases, a most important group because it towers above all the others in frequency, there appears to be no tendency toward diminution, either in the incidence of the shorter cases, i. e., those which kept employees from work for one week or less, or in the more severe cases, i. e., those causing incapacitation for more than two weeks.

The ups and downs of the graph for the women are remarkably like those for the men, although the female rates were, of course, at

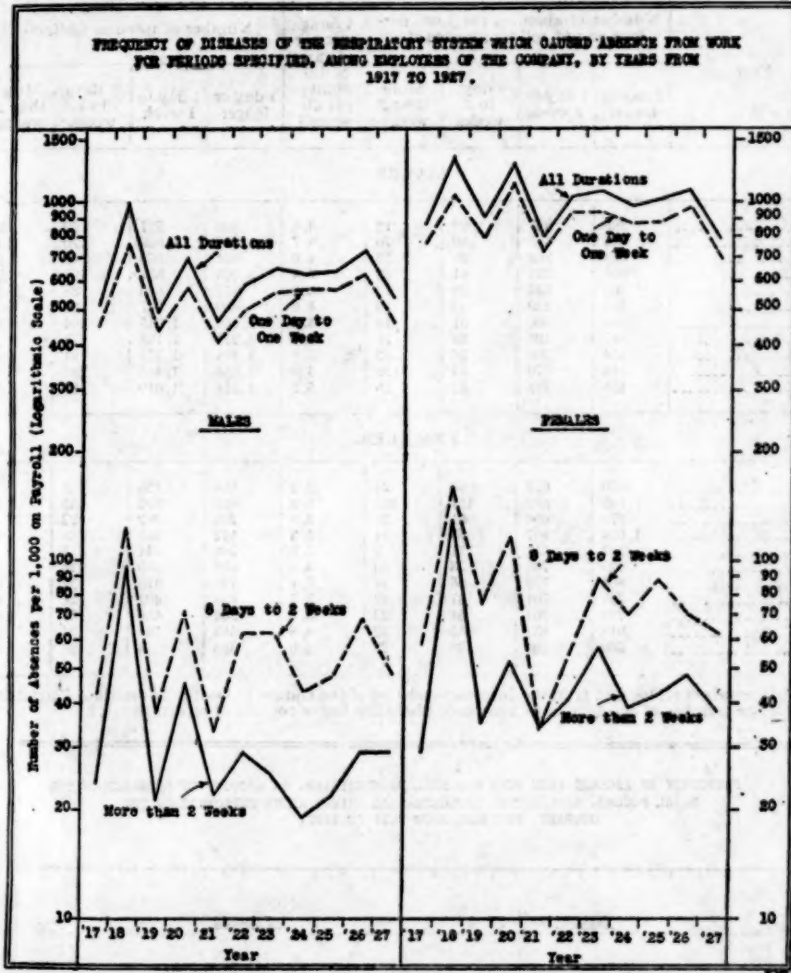


Fig. 5.

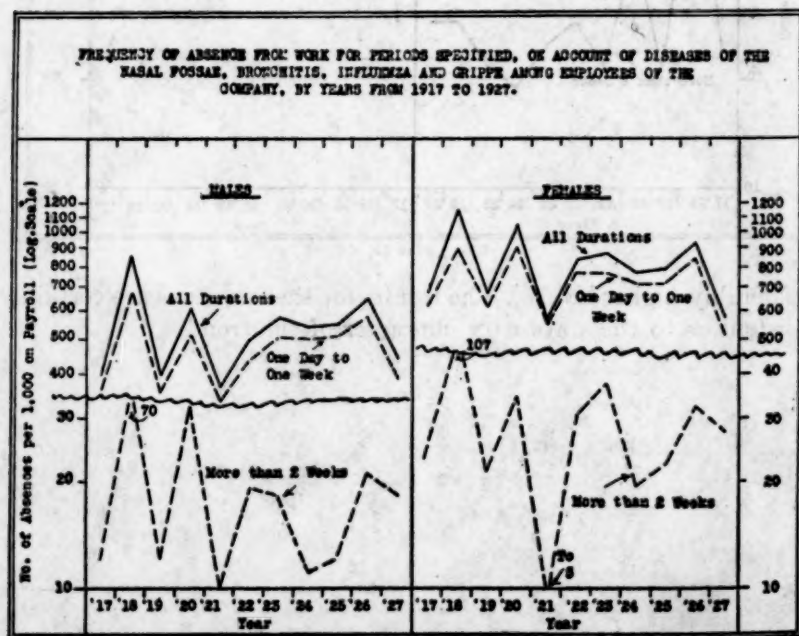
considerably higher levels. The results for the two sexes are certainly consistent as to the stationary character of the trend.

TABLE 9.—Frequency of absence from work for periods specified, on account of diseases of the nasal fossæ, bronchitis, influenza,¹ and grippe among employees of the company, 1917 to 1927

Year	Number of absences per 1,000 persons on pay roll for absence of—				Average number of days of disability per absence	Number of absences lasting—			
	1 day or longer	1 day to 1 week	8 days to 2 weeks	More than 2 weeks		1 day or longer	1 day to 1 week	8 days to 2 weeks	More than 2 weeks
MALES									
1917	395	357	26	12	3.6	793	717	52	24
1918	844	665	109	70	5.7	1,318	1,039	170	109
1919	393	353	28	12	4.0	624	560	45	19
1920	604	511	61	32	5.4	1,005	851	101	53
1921	366	333	23	10	3.9	612	556	39	17
1922	495	430	46	19	4.6	859	747	80	32
1923	569	500	51	18	4.5	1,155	1,015	104	36
1924	537	495	31	11	3.7	1,221	1,125	71	25
1925	554	506	36	12	3.8	1,394	1,273	91	30
1926	644	570	53	21	4.3	1,655	1,465	135	55
1927	438	388	32	18	5.2	1,151	1,019	85	47
FEMALES									
1917	670	612	34	24	3.2	138	126	7	5
1918	1,140	882	151	107	6.2	416	322	55	39
1919	678	606	51	21	3.8	298	262	22	9
1920	1,014	897	83	34	5.3	442	391	36	15
1921	567	551	11	5	3.8	248	241	5	2
1922	829	766	33	30	4.8	379	350	15	14
1923	864	762	65	37	5.1	425	375	32	18
1924	760	704	37	19	3.7	433	401	21	11
1925	779	703	54	22	3.8	504	455	35	14
1926	918	833	53	32	4.8	595	540	34	21
1927	569	504	38	27	4.9	388	344	26	18

¹ Title numbers 97, 99, and 11 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.



In the one day to one week disabilities from diseases of the pharynx and tonsils among either sex the rates appear to be tending downward. The longer cases, however, those causing absence for more than one week, among either sex showed a tendency to increase in frequency. Since the shorter disabilities were much more numerous than those which lasted longer than one week, the rates for diseases of the pharynx and tonsils causing absence for one day or longer showed a slightly decreasing tendency among both the men and the women.

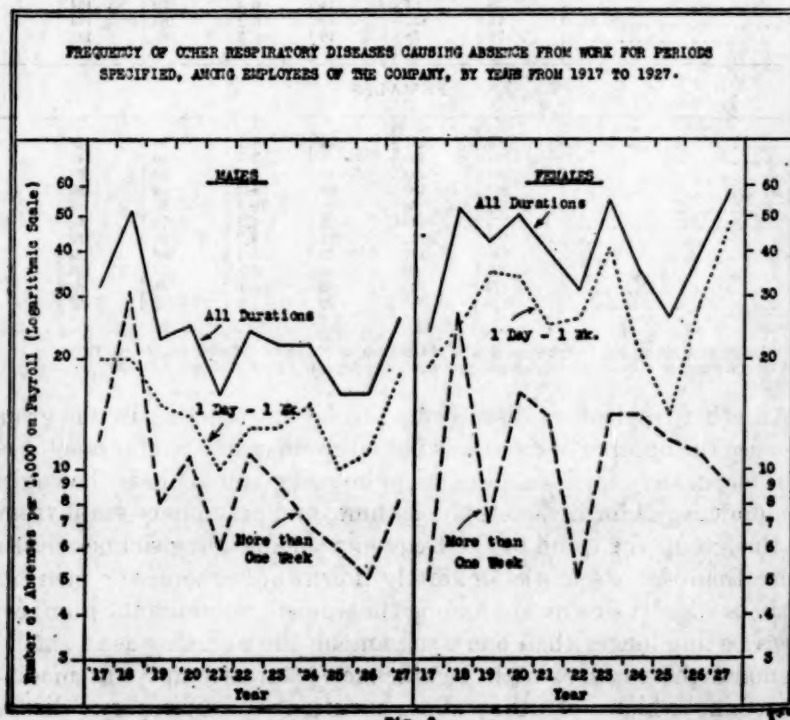
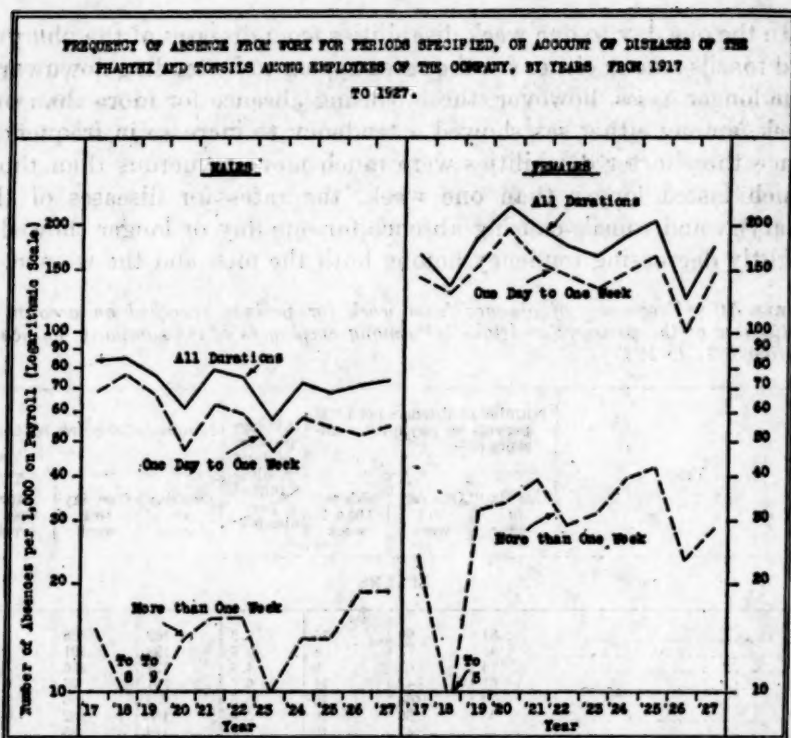
TABLE 10.—Frequency of absence from work for periods specified on account of diseases of the pharynx and tonsils¹ among employees of the company, by years, from 1917 to 1927

Year	Number of absences per 1,000 persons on pay roll for absence of—			Average number of days of disability per absence ¹	Number of absences lasting—		
	One day or longer	One day to 1 week	More than 1 week		One day or longer	One day to 1 week	More than 1 week
MALES							
1917.....	84	69	15	5.3	169	138	31
1918.....	85	77	8	3.7	133	121	12
1919.....	76	67	9	4.6	121	106	15
1920.....	61	47	14	6.6	101	78	23
1921.....	79	63	16	6.5	132	106	26
1922.....	75	59	16	5.4	130	102	28
1923.....	57	47	10	5.8	116	95	21
1924.....	72	38	14	5.6	163	132	31
1925.....	68	54	14	6.4	170	134	36
1926.....	71	52	19	6.1	183	134	49
1927.....	74	55	19	6.7	195	145	50
FEMALES							
1917.....	165	141	24	4.2	34	29	5
1918.....	134	129	5	3.7	49	47	2
1919.....	185	153	32	4.4	80	66	14
1920.....	227	193	34	4.2	99	84	15
1921.....	197	158	39	10.4	86	69	17
1922.....	173	144	29	4.7	79	66	13
1923.....	163	132	31	5.2	80	65	15
1924.....	186	147	39	5.4	106	84	22
1925.....	206	164	42	5.8	133	106	27
1926.....	123	100	23	6.0	80	65	15
1927.....	173	145	28	5.9	118	99	19

¹ Title number 100 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.

All other respiratory diseases had to be put together in one group, because the number of cases was not large enough to enable one to consider separately such diseases as pulmonary tuberculosis, laryngitis, pneumonia (all forms), pleurisy, asthma, and pulmonary emphysema. In this group the trend in the frequency of disabling sickness lasting more than one week was definitely downward among the men, and perhaps slightly downward among the women, although the number of cases lasting longer than one week among the women was so small as to make the rates of little significance. An attempt was made to ascertain which of the above-mentioned respiratory diseases



accounted for the decline in the rate of cases lasting longer than one week among the men; but even when certain combinations were made, such as pneumonia and pleurisy, the number of cases was still too small to yield significant results. Since the diseases in this group are the more serious respiratory conditions, it is important to find that as a group they diminished in frequency, at least among the males, even though we can not measure the decline of specific diseases within the group.

TABLE 11.—*Frequency of all other respiratory diseases¹ which caused absence from work for periods specified among employees of the company, by years, 1917 to 1927*

Year	Number of absences per 1,000 persons on pay roll for absence of—			Average number of days of disability per absence ¹	Number of absences lasting—		
	One day or longer	One day to 1 week	More than 1 week		One day or longer	One day to 1 week	More than 1 week
MALES							
1917.....	32	20	12	23.4	65	40	25
1918.....	51	20	31	49.0	80	32	48
1919.....	23	15	8	27.2	37	24	13
1920.....	25	14	11	26.7	42	24	18
1921.....	16	10	6	23.7	26	17	9
1922.....	24	13	11	38.0	42	22	20
1923.....	22	13	9	13.7	44	27	17
1924.....	22	15	7	11.7	49	34	15
1925.....	16	10	6	17.4	41	25	16
1926.....	16	11	5	38.0	42	28	14
1927.....	26	18	8	11.6	68	46	22
FEMALES							
1917.....	24	13	5	4.2	5	4	1
1918.....	52	25	27	24.8	19	9	10
1919.....	42	35	7	10.9	18	15	3
1920.....	50	34	16	33.8	22	15	7
1921.....	39	25	14	50.6	17	11	6
1922.....	31	26	5	4.4	14	12	3
1923.....	55	41	14	17.0	27	20	7
1924.....	35	21	14	40.6	20	12	8
1925.....	26	14	12	55.9	17	9	8
1926.....	40	29	11	29.5	26	19	7
1927.....	57	48	9	11.6	39	33	6

¹ Pulmonary tuberculosis, diseases of the larynx, pneumonia (all forms), pleurisy, asthma, pulmonary emphysema, etc.—title numbers 31, 98, 100-107 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.

DISEASES OF THE DIGESTIVE SYSTEM

The table and graph showing the frequency of absence from work on account of diseases of the digestive system reveal a stationary trend for both the shorter and the longer cases among either sex.

TABLE 12.—*Frequency of diseases of the digestive system¹ which caused absence from work for periods specified among employees of the company, by years from 1917 to 1927*

Year	Number of absences per 1,000 persons on pay roll for absence of—			Average number of days of disability per absence ¹	Number of absences lasting—		
	One day or longer	One day to 1 week	More than 1 week		One day or longer	One day to 1 week	More than 1 week
MALES							
1917.....	249	230	19	3.6	500	461	39
1918.....	287	271	16	3.1	448	423	25
1919.....	213	200	13	3.6	338	318	20
1920.....	278	256	22	5.4	463	426	37
1921.....	218	196	22	5.4	364	328	36
1922.....	224	198	26	6.1	389	343	46
1923.....	224	205	19	4.3	455	416	39
1924.....	263	240	23	4.9	598	545	53
1925.....	241	224	17	4.1	606	564	42
1926.....	224	205	19	4.3	577	528	49
1927.....	233	211	22	5.5	613	554	59
FEMALES							
1917.....	432	388	44	5.0	89	80	9
1918.....	381	351	30	4.8	139	128	11
1919.....	340	322	18	3.5	147	139	8
1920.....	484	461	23	3.1	211	201	10
1921.....	412	364	48	5.9	180	159	21
1922.....	435	396	39	5.3	199	181	18
1923.....	429	401	28	4.3	211	197	14
1924.....	521	479	42	5.9	297	273	24
1925.....	402	373	29	4.1	260	241	19
1926.....	397	367	30	5.4	257	238	19
1927.....	386	367	19	5.3	263	250	13

¹ Title numbers 108, 110-127 in the International List of the Causes of Death, 3d revision, Paris, 1920.² Average number of calendar days from date disability began to date of return to work.

In Table 13 information is given concerning the nature of the digestive diseases which caused absence from work for more than one week in 1917-1922 compared with 1923-1927. In either period the frequency of diseases of the stomach was practically the same, although the female rates, as usual, were at a higher level. A considerable increase is indicated in the frequency of appendicitis during the last five years compared with the six-year period 1917-1922. Coincident with this increase, however, a corresponding decrease occurred in the frequency of other diseases of the intestines and in other diseases of the digestive system, which raises the question whether these results are due to a change in the fashion of diagnosis or whether a real increase occurred in the incidence of appendicitis among both male and female employees of the company.

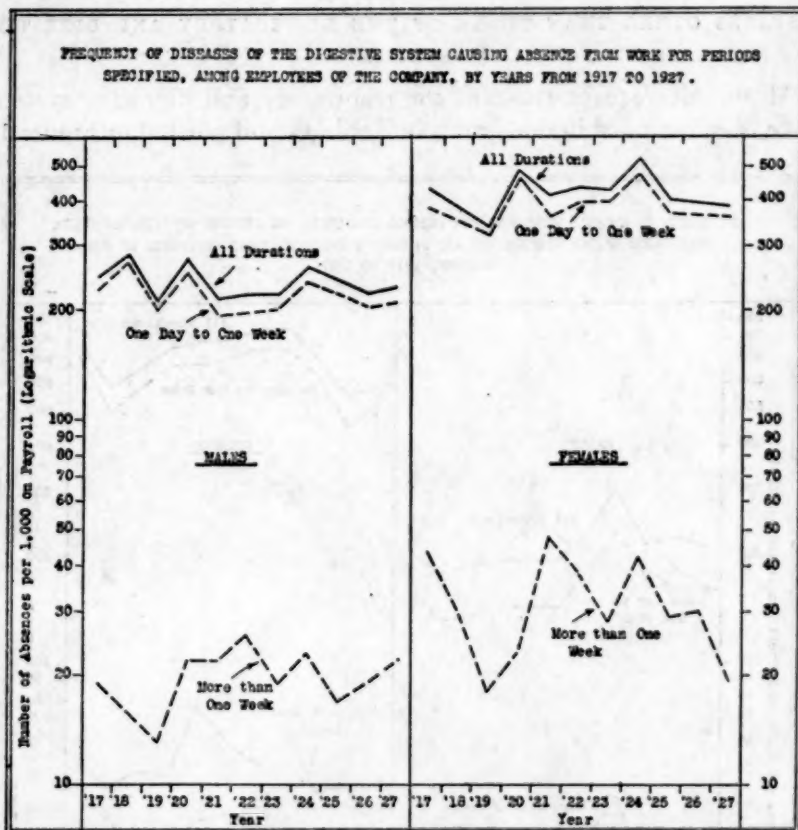


TABLE 13.—Frequency of specified digestive diseases causing absence for more than one week among employees of the company in 1917-1922 compared with 1923-1927

Period	Diseases of the digestive system		Diseases of the stomach, except cancer		Appendicitis		Other diseases of the intestines		Other diseases of the digestive system	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females

ANNUAL NUMBER OF ABSENCES LASTING MORE THAN ONE WEEK PER 1,000 PERSONS ON PAY ROLL

1917-1922.....	19.9	33.6	5.5	7.3	4.5	9.8	5.0	5.6	4.9	10.3
1923-1927.....	20.1	29.3	5.6	7.2	5.8	12.2	4.7	4.0	4.0	5.9

NUMBER OF ABSENCES LASTING MORE THAN ONE WEEK

1917-1922.....	203	77	56	17	46	23	51	13	50	24
1923-1927.....	242	89	67	22	70	37	57	12	48	18

DISEASES OTHER THAN THOSE OF THE RESPIRATORY AND DIGESTIVE SYSTEMS

All diseases except those of the respiratory and digestive systems have been included in one group in Table 14 and plotted in Figure 10.

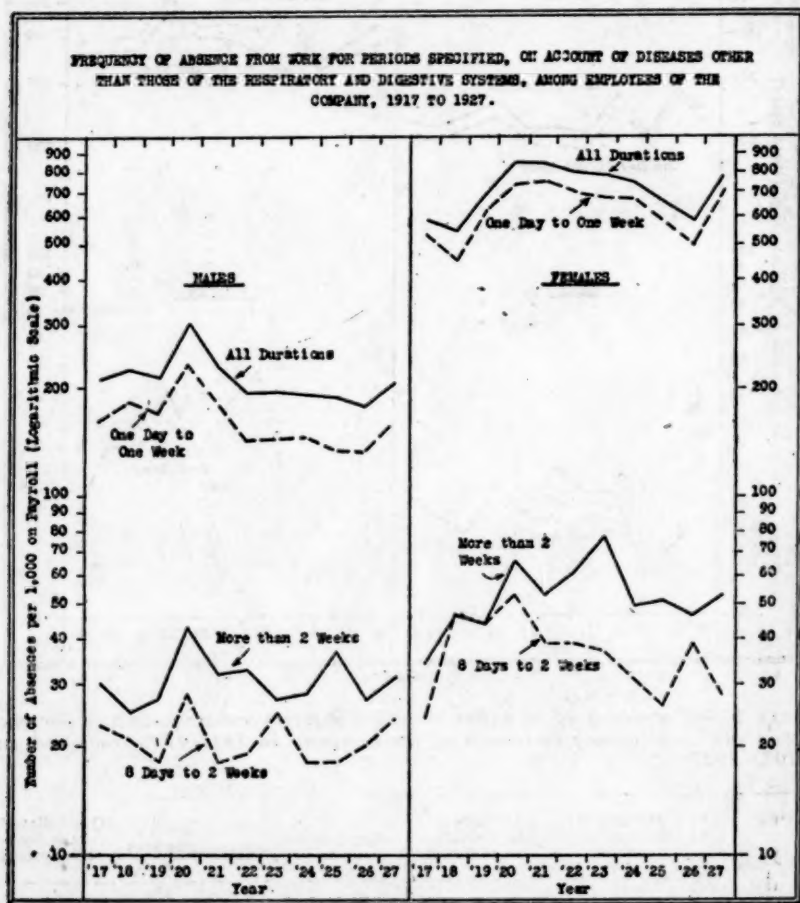


Fig. 10.

Again, a more or less stationary trend is indicated in the frequency of disabling attacks, except in the incidence of the shorter cases (one day to one week) among the men. These exhibit a tendency to decrease moderately in frequency.

TABLE 14.—Frequency of diseases other than those of the respiratory and digestive systems,¹ which caused absence from work for periods specified among employees of the company, by years, from 1917 to 1927

Year	Number of absences per 1,000 persons on pay roll for absence of—				Average number of days of disability per absence ²	Number of absences lasting—			
	1 day or longer	1 day to 1 week	8 days to 2 weeks	More than 2 weeks		1 day or longer	1 day to 1 week	8 days to 2 weeks	More than 2 weeks
MALES									
1917.....	214	161	23	30	15.8	429	323	46	60
1918.....	227	181	21	25	9.3	355	283	33	39
1919.....	215	170	18	27	12.5	341	269	29	43
1920.....	305	234	28	43	13.7	507	389	47	71
1921.....	231	181	18	32	12.7	387	302	30	55
1922.....	196	144	19	33	15.5	340	249	33	58
1923.....	197	145	25	27	8.8	399	293	51	55
1924.....	193	147	18	28	11.0	439	334	42	63
1925.....	190	135	18	37	13.6	479	339	45	95
1926.....	179	132	20	27	11.8	459	339	50	70
1927.....	209	154	24	31	12.2	548	405	63	80
FEMALES									
1917.....	597	539	24	34	14.9	123	111	5	7
1918.....	551	458	47	46	6.4	201	167	17	17
1919.....	701	613	44	44	8.3	303	255	19	19
1920.....	869	750	53	66	7.8	379	327	23	29
1921.....	863	771	39	53	5.8	377	337	17	23
1922.....	816	716	39	61	7.3	373	327	18	28
1923.....	801	687	37	77	7.2	394	338	18	38
1924.....	768	688	31	49	5.2	438	392	18	28
1925.....	666	589	26	51	5.9	431	381	17	33
1926.....	594	509	39	46	7.3	385	330	25	30
1927.....	738	717	28	53	6.7	544	489	19	36

¹ Title numbers 1-10, 12-30, 32-96, 128-159, 164, and 205 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.

A marked downward trend is shown in the frequency of rheumatism and the myalgias since 1920 among the men and since 1922 among the women. The male rate of cases lasting longer than one week shows a decline as rapid as the rate of cases lasting from one day to one week. Another exceptional circumstance in this group of diseases is the low female incidence rate which was actually below that of the males. The number of cases causing disability for more than one week among the women was so small as to render meaningless the year to year fluctuations in frequency, for which reason these rates were not shown in Figure 11.

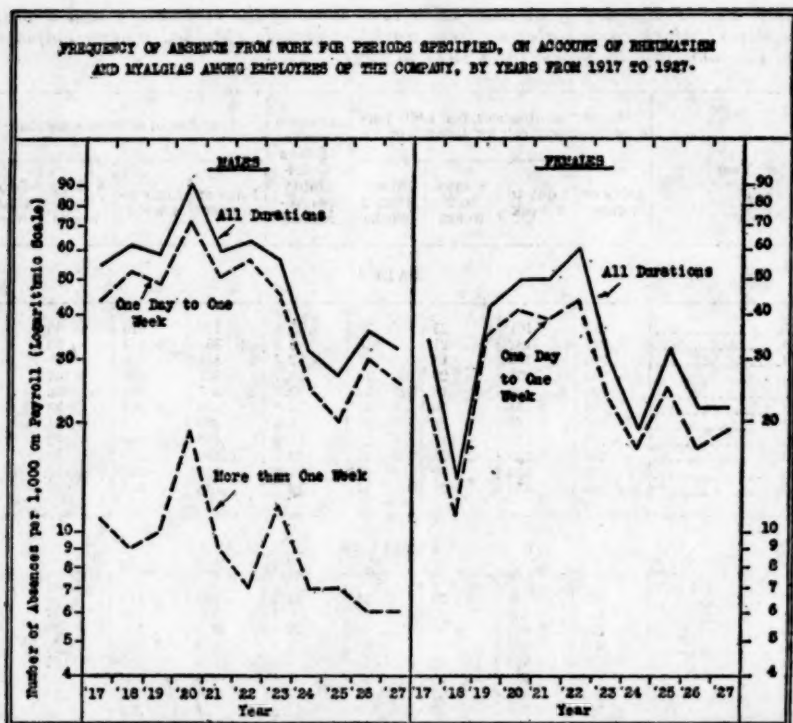


Fig. 11.

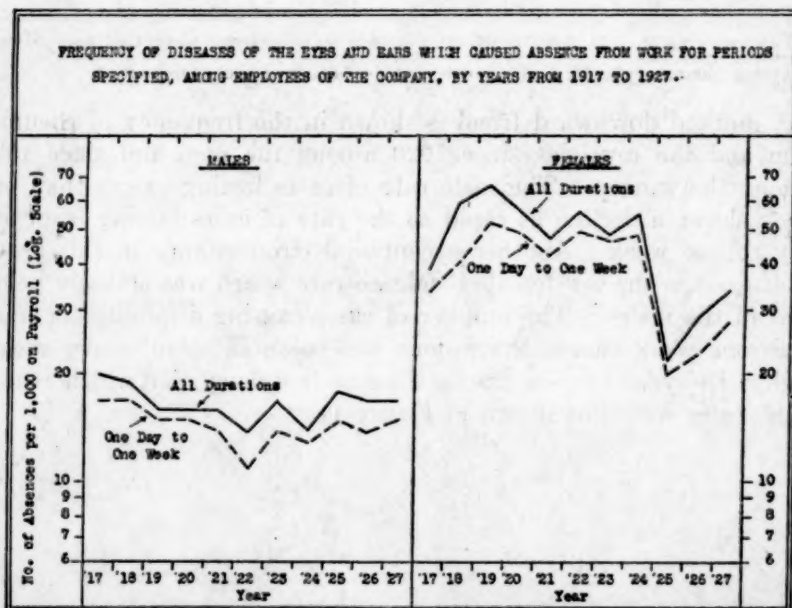


Fig. 12.

TABLE 15.—Frequency of rheumatism and the myalgias¹ causing absence from work for periods specified, among employees of the company, by years from 1917 to 1927

Year	Number of absences per 1,000 persons on pay roll for absence of—			Average number of days of disability per absence ¹	Number of absences lasting—		
	One day or longer	One day to 1 week	More than 1 week		One day or longer	One day to 1 week	More than 1 week
MALES							
1917.....	55	44	11	15.1	111	89	22
1918.....	62	53	9	5.7	97	89	14
1919.....	59	49	10	6.2	93	78	15
1920.....	92	73	19	10.1	153	121	32
1921.....	60	51	9	12.2	100	85	15
1922.....	64	57	7	5.4	111	100	11
1923.....	57	45	12	5.9	116	92	24
1924.....	32	25	7	11.5	72	57	15
1925.....	27	20	7	15.1	69	51	18
1926.....	36	30	6	7.8	92	77	15
1927.....	32	26	6	6.6	85	69	16
FEMALES							
1917.....	34	24	10	21.3	7	5	3
1918.....	14	11	3	46.2	5	4	1
1919.....	42	35	7	11.9	18	15	3
1920.....	50	41	9	10.1	22	18	4
1921.....	50	39	11	8.5	22	17	5
1922.....	61	44	17	12.3	28	20	8
1923.....	30	24	6	5.8	15	12	3
1924.....	19	17	2	4.5	11	10	1
1925.....	32	25	7	8.2	21	16	5
1926.....	22	17	5	12.3	14	11	3
1927.....	22	19	3	9.9	15	13	2

¹ Title numbers 51, 52, and part of 158 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.

For diseases of the eyes and ears the male incidence rates did not show much change from year to year. The fluctuations were wider among the women, and since 1924 the rates have been at a lower level than during the period 1917-1924.

TABLE 16.—*Frequency of diseases of the eyes and ears¹ which caused absence from work for periods specified, among employees of the company, by years, from 1917 to 1927*

Year	Number of absences per 1,000 persons on pay roll for absence of—			Average number of days of disability per absence ¹	Number of absences lasting—		
	One day or longer	One day to 1 week	More than 1 week		One day or longer	One day to 1 week	More than 1 week
MALES							
1917.....	20	17	3	4.6	40	35	5
1918.....	19	17	2	4.7	30	26	4
1919.....	16	15	1	3.5	25	23	2
1920.....	16	15	1	3.7	27	25	2
1921.....	16	14	2	3.6	27	24	3
1922.....	14	11	3	5.6	25	20	5
1923.....	17	14	3	6.1	35	29	6
1924.....	14	13	1	4.0	32	30	2
1925.....	18	15	3	7.1	45	38	7
1926.....	17	14	3	5.0	44	35	9
1927.....	17	15	2	6.6	44	40	4
FEMALES							
1917.....	39	34	5	10.9	8	7	1
1918.....	60	41	19	12.4	22	15	7
1919.....	67	53	14	4.6	29	23	6
1920.....	57	50	7	3.7	25	22	3
1921.....	48	43	5	4.0	21	19	2
1922.....	57	50	7	3.4	26	23	3
1923.....	49	47	2	2.8	24	23	1
1924.....	56	49	7	5.6	32	28	4
1925.....	22	20	2	3.1	14	13	1
1926.....	29	23	6	5.7	19	15	4
1927.....	34	28	6	3.8	23	19	4

¹ Title numbers 85 and 86 in the International List of the Causes of Death, 3d revision, Paris, 1920.² Average number of calendar days from date disability began to date of return to work.

The frequency of disability lasting from one day to one week on account of diseases of the skin decreased gradually during the period among the male but not among the female employees. The longer cases among the men show no evidence of a declining trend.

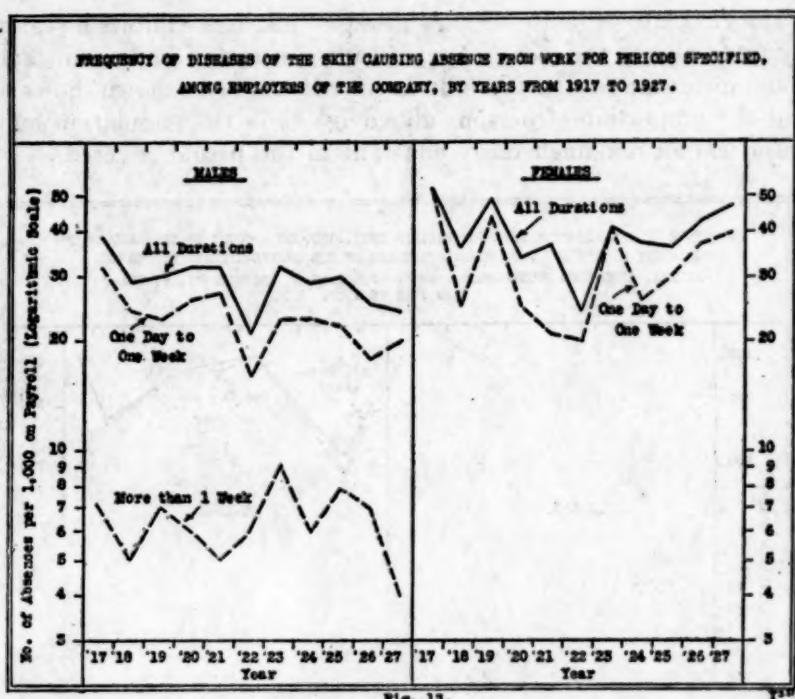


TABLE 17.—Frequency of diseases of the skin¹ causing absence from work for periods specified, among employees of the company, by years, from 1917 to 1927

Year	Number of absences per 1,000 persons on pay roll for absence of—			Average number of days of disability per absence ¹	Number of absences lasting—		
	One day or longer	One day to 1 week	More than 1 week		One day or longer	One day to 1 week	More than 1 week
MALES							
1917	39	32	7	8.2	78	64	14
1918	29	24	5	7.4	45	37	8
1919	30	23	7	7.5	47	37	10
1920	32	26	6	6.4	54	43	11
1921	32	27	5	7.1	54	46	8
1922	22	16	6	7.7	38	28	10
1923	32	23	9	7.9	65	47	18
1924	29	23	6	6.2	65	51	14
1925	30	22	8	8.2	75	56	19
1926	25	18	7	6.5	64	46	18
1927	24	20	4	5.7	63	53	10
FEMALES							
1917	53	53	0	2.8	11	11	0
1918	36	25	11	5.9	13	9	4
1919	49	44	5	3.4	21	19	2
1920	34	25	9	5.9	15	11	4
1921	37	21	16	13.5	16	9	7
1922	24	20	4	5.0	11	9	2
1923	41	41	0	3.1	20	20	0
1924	37	26	11	5.3	21	15	6
1925	36	30	6	4.4	23	19	4
1926	43	37	6	4.9	28	24	4
1927	47	40	7	3.9	32	27	5

¹ Title numbers 151-154 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.

The circulatory genito-urinary group of diseases exhibits a stationary trend among the men. Age, of course, is a very important factor in the incidence rate of these diseases. It has been shown, however, that the proportion of persons above age 45 in the population under consideration remained fairly constant in the period covered.

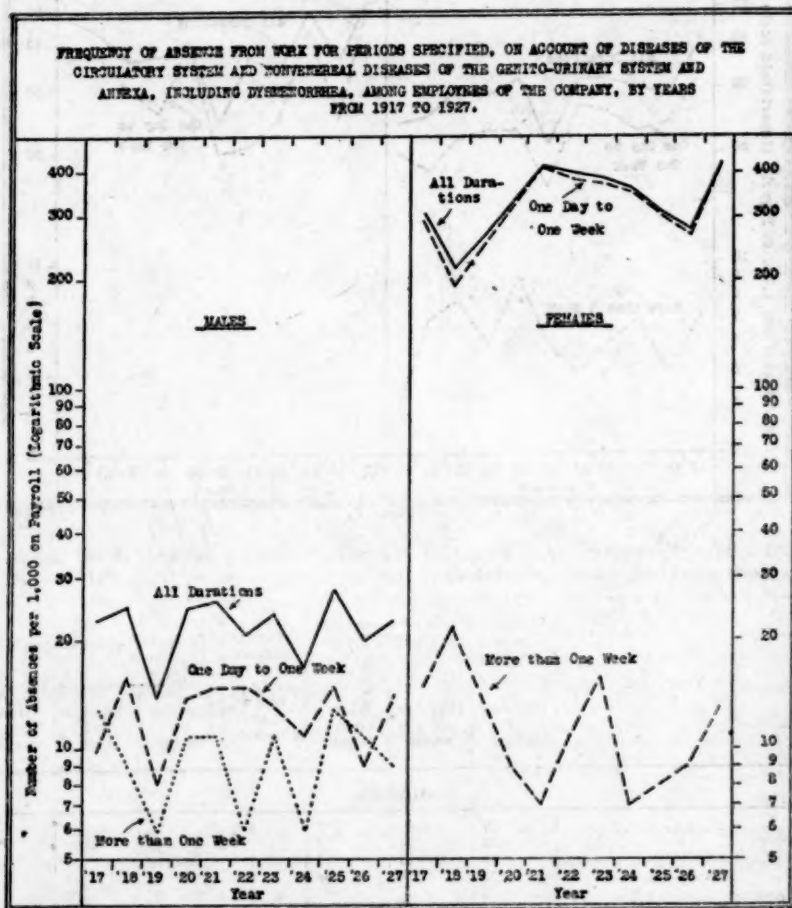


Fig. 14.

The curve for all durations, as well as for the one day to one week disabilities on account of circulatory and genito-urinary diseases among the women is practically determined by the number of absences on account of dysmenorrhea. These increased from 1918 to 1921, then decreased to 1926. The curve for the longer cases among the women appears to show a downward trend, but the number of cases was too small for a conclusion on this point.

TABLE 18.—*Frequency of absence from work for periods specified, on account of diseases of the circulatory system and nonvenereal diseases of the genito-urinary system and annexa, including dysmenorrhea,¹ among employees of the company, by years from 1917 to 1927*

Year	Number of absences per 1,000 persons on pay roll for absence of—			Average number of days of disability per absence ¹	Number of absences lasting—		
	One day or longer	One day to 1 week	More than 1 week		One day or longer	One day to 1 week	More than 1 week
MALES							
1917.....	23	10	13	31.6	46	21	25
1918.....	25	16	9	28.1	39	25	14
1919.....	14	8	6	27.4	23	13	10
1920.....	25	14	11	17.3	41	23	18
1921.....	26	15	11	17.5	44	25	19
1922.....	21	15	6	29.8	36	26	10
1923.....	24	13	11	18.8	49	27	22
1924.....	17	11	6	16.8	39	24	15
1925.....	28	15	13	17.4	71	39	32
1926.....	20	9	11	29.6	52	24	28
1927.....	23	14	9	26.6	60	37	23
FEMALES							
1917.....	306	291	15	14.8	63	60	3
1918.....	216	194	22	3.5	79	71	8
1919.....	264	250	14	10.1	114	108	6
1920.....	332	323	9	5.3	145	141	4
1921.....	419	412	7	4.0	183	180	3
1922.....	400	389	11	3.1	183	178	5
1923.....	390	374	16	2.8	192	184	8
1924.....	361	354	7	2.1	206	202	4
1925.....	311	303	8	1.7	201	196	5
1926.....	278	269	9	3.6	180	174	6
1927.....	427	414	13	2.4	291	282	9

¹ Title numbers 87-96 and 128-142 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.

The frequency of all other nonrespiratory and nondigestive diseases is shown in Table 19 and Figure 15. The one-day to one-week disabilities in this group show a declining tendency since 1920 among both males and females, but the longer cases, i. e., those lasting more than one week, appear to be neither decreasing nor increasing in frequency.

TABLE 19.—*Frequency of absence from work for periods specified, on account of all other nonrespiratory and nondigestive diseases¹ among employees of the company, by years from 1917 to 1927*

Year	Number of absences per 1,000 persons on pay roll for absence of—			Average number of days of disability per absence ¹	Number of absences lasting—		
	One day or longer	One day to 1 week	More than 1 week		One day or longer	One day to 1 week	More than 1 week
MALES							
1917.....	77	56	21	18.8	151	114	40
1918.....	92	72	20	8.0	144	112	32
1919.....	96	75	21	17.1	153	118	35
1920.....	140	107	33	18.3	232	177	55
1921.....	97	73	24	15.0	162	122	40
1922.....	75	43	32	23.3	150	75	55
1923.....	66	48	18	8.9	134	98	36
1924.....	101	76	25	12.1	231	172	59
1925.....	87	62	25	11.5	219	155	64
1926.....	81	61	20	14.9	207	157	50
1927.....	112	78	34	13.0	236	206	90
FEMALES							
1917.....	166	136	30	18.2	34	23	6
1918.....	225	187	38	5.4	82	68	14
1919.....	250	232	48	7.8	121	100	21
1920.....	395	310	85	10.3	172	135	37
1921.....	309	256	53	7.1	135	112	23
1922.....	274	212	62	13.4	125	97	23
1923.....	221	201	90	14.1	143	99	44
1924.....	235	210	55	7.4	168	137	31
1925.....	256	212	54	12.1	172	137	35
1926.....	223	164	59	12.0	144	106	38
1927.....	259	217	52	11.7	183	148	35

¹ Title numbers 1-10, 12-30, 32-50, 53-54, 143-150, 155-157, part of 153, 159, 164, 203-205 in the International List of the Causes of Death, 3d revision, Paris, 1920.

² Average number of calendar days from date disability began to date of return to work.

SUMMARY AND CONCLUSIONS

The rate of absence from work from all causes of disability combined among employees of a large public utility in Boston showed no tendency to decline during the 11-year period from 1917 to 1927. The causes of disability were considered under five main heads, as follows: Industrial accidents, nonindustrial accidents, diseases of the respiratory system, diseases of the digestive system, and diseases other than those of the respiratory and digestive systems.

Disabling industrial accidents among the male employees showed a downward trend, not only in the year-to-year incidence of the shorter cases, but also in the more severe industrial disablements, in contrast to a stationary trend in the frequency of injuries of nonindustrial origin.

The two most important groups of diseases from the standpoint of the amount of absenteeism they occasion in industry, namely, diseases of the respiratory and of the digestive systems, which together caused 68 per cent of the disabilities during the period

reviewed, exhibited a stationary trend. For all other diseases put together in one group the result was much the same except in the year-to-year incidence of the shorter cases (one day to one week) among the men, which was moderately downward.

Not all diseases, however, within these three broad disease groups showed the same tendency. In the one-day to one-week disabilities from diseases of the pharynx and tonsils among either sex the trend was slightly downward, although the longer-than-one-week cases

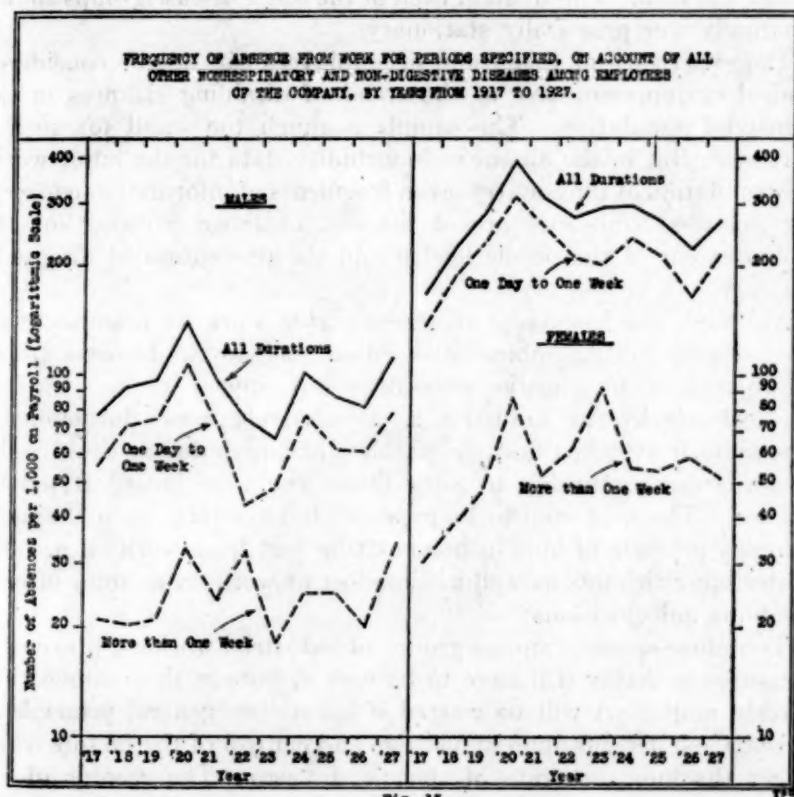


Fig. 15.

among both males and females showed a tendency to increase in frequency. The more severe respiratory diseases, such as pulmonary tuberculosis, pneumonia, pleurisy, asthma, pulmonary emphysema, etc., as a group showed a tendency to diminish in frequency among the men. Among the women the number of such cases was too small to enable one to come to any conclusion concerning the trend.

The appendicitis rate increased during the period among both sexes, but this showing may have been due to a change in the fashion of diagnosis, since a corresponding decrease occurred in certain other diseases of the digestive system.

In the nonrespiratory, nondigestive group of diseases a marked downward trend is indicated in the incidence rate of rheumatism and the myalgias among either sex, and, among the males, for the more severe as well as for the shorter cases. Small numbers precluded observation of the trend of the more serious cases among the women. The shorter cases, i. e., those causing disability for one day to one week, of diseases of the skin, and of miscellaneous nonrespiratory, nondigestive diseases decreased somewhat during the 11-year period among the men. The trend of each of the other disease groups shown separately was practically stationary.

The experience of this group of employees can not be considered typical or representative of the trend of disabling sickness in the industrial population. The sample is much too small for such a purpose. But in the absence of morbidity data for the adult working population of the country, even fragments of information concerning sickness tendencies are of interest to those working for the advancement of the public health and the prevention of disease in industry.

Although the frequency of absence from work on account of all causes of disability combined showed no tendency to decrease during the period, a pessimistic view does not appear to be justified. Medical service in industry is a relatively new development. Naturally it attacked first the problem of how industry could assist in curing and returning to work those who were incapacitated by disease. The next step to be expected is an attack upon the more complex problem of how to prevent time lost from work on account of disabling sickness as well as time lost at work on account of non-disabling indispositions.

To reduce sickness among groups of industrial workers, preventive measures probably will have to be very *definite* in their application. Money and effort will be wasted if spent "on general principles." Success will depend upon knowledge and control of the factors which affect the incidence rate of specific diseases. The records of the Edison company of Boston reveal the outstanding importance of the common cold and of "indigestion" as causes of absence from work. If we had also a record of the effect upon working efficiency of the cases which did not cause actual disability, the story undoubtedly would be even more impressive.

ACKNOWLEDGMENTS

To the Edison Electric Illuminating Co. of Boston, and especially to Mr. Herbert W. Moses, superintendent employment bureau of that company, acknowledgments are due for generous assistance in the work of tabulating and analyzing the morbidity data presented in the foregoing pages.

RESPIRATORS FOR PROTECTION AGAINST POISONOUS SPRAYS

EFFICIENCY OF PAINTERS' RESPIRATORS FOR FILTERING LEAD PAINT, BENZOL, AND VITREOUS ENAMEL SPRAYS

At the request of a committee appointed by the National Safety Council, an investigation has been made by the United States Bureau of Mines and the National Safety Council, in cooperation with the United States Public Health Service, to determine the value of respirators as a means of protection from the hazard of spray painting, resulting from exposure to lead, benzol, and silica. The specific questions proposed by the National Safety Council to be answered were as follows:

1. What filtering material, if any, is adequate—
 - (a) To reduce the lead content of the air to which a spray coater is exposed, from 200 milligrams per cubic meter to 0.6 milligram per cubic meter?
 - (b) To reduce the amount of benzol under similar conditions from 2,000 to 75 parts per million?
 - (c) To reduce the number of silica particles under similar conditions from 200,000,000 to 100,000 per cubic meter as determined by the Palmer method?
2. How long would such a layer function?
3. How do certain typical masks now available measure up to this standard?

The concentrations stated above for lead and benzol should not be construed as being those to which spray painters are commonly exposed. They represent more nearly the high concentrations which can quickly cause sickness and are to be considered as extremes.

It may be stated, as a result of the tests, that in general the respirators with cotton, paper, or fabric filters remove 90 per cent or more of the lead from air carrying paint mist. These respirators restrain none of the solvent vapors, however; but the addition of a canister or cartridge of activated charcoal to the respirator removes all solvent vapors until the charcoal becomes saturated.

The useful life of filters is determined by their increase in resistance, which necessitates changing for fresh filters at intervals of several hours. When charcoal is saturated, the cartridge must be exchanged for a fresh one. Canisters of the size used with gas masks may last for weeks before a change is necessary.

The respirators were somewhat less efficient against the silica-dust sprays, but they restrained 24 per cent or more of the dust from the air passed through them; most of them were more than 50 per cent efficient.

The report on this investigation has just been issued as Public Health Bulletin No. 177, a limited number of copies of which may be obtained upon request from the Surgeon General, United States Public Health Service, Washington, D. C.

CENSUS OF STATE HOSPITALS FOR MENTAL DISEASE, 1926

PRELIMINARY REPORT

The Department of Commerce makes the following preliminary announcement of the results of the census of State and Federal hospitals for mental disease for 1926. The figures here given are exclusive of the State psychopathic hospitals, and the Federal hospitals operated by the Veterans' Bureau, the Public Health Service, the Army, and the Navy.

Returns were received covering 161 out of a total of 165 State and Federal hospitals for mental disease. Reports were received for all State hospitals in 44 States, for the District of Columbia (St. Elizabeth's Hospital), and for the Federal hospital for Indians, located in South Dakota. In addition, reports were received for one of the two State hospitals in Idaho, and for three of the four State hospitals in Maryland. No reports were received for the State hospitals in Arkansas and New Mexico.

The 161 hospitals for which returns for 1926 were received had 52,591 first admissions during the year 1926, as compared with 50,467 in 1922 for the full number of 165 hospitals.

These first admissions represent patients received during the year who had not previously been under treatment in any hospital for mental disease. Such newly admitted patients afford the best available measure of the number of new cases of mental diseases which are brought under hospital treatment during a given year.

In the group of States with complete returns for 1926 there were 46.3 first admissions in 1926 per 100,000 of the general population, as compared with 46.2 first admissions per 100,000 in 1922. In other words, between 1922 and 1926 the number of first admissions in these States increased only a little more rapidly than the general population.

During the year 1910 the State and Federal hospitals in the entire country had a total of 45,873 admissions, including first admissions, patients received by transfer, and readmissions of patients who had previously been under treatment. The first admissions were not

separately enumerated in 1910. During the year 1922, the total admissions numbered 65,019. In the entire United States the total admissions per 100,000 of the general population increased from 49.9 in 1910 to 59.6 in 1922.

The extent to which public provision has been made for the treatment of mental diseases is, perhaps, best indicated by the number of patients present in the hospitals on a given date. In the country as a whole the number of mental patients under institutional care shows a steady increase, as indicated by the following comparative figures for the United States as a whole: January 1, 1910, 159,096; January 1, 1922, 222,406; January 1, 1923, 229,664; and for the 161 reported hospitals, January 1, 1926, 243,400; and January 1, 1927, 250,890.

In the group of States with complete returns for 1926 the number of mental patients under care, per 100,000 of the general population, was 176.2 on January 1, 1910; 205.8 on January 1, 1922; 209.4 on January 1, 1923; 215.5 on January 1, 1926; and 219.1 on January 1, 1927.

In comparing the figures for individual States it should be noted that the number of mental patients under hospital care in a given State is affected, not only by the number of mental patients in the State, but also by such factors as the capacity of the hospitals in the State, the effectiveness of the local machinery for bringing mental cases under the care of the hospitals, and the distribution of cases between the State hospitals and the county, municipal, and private hospitals in each State. Where a State shows a large increase in the number of first admissions, or in the number under care at a given time, the increase usually represents an expansion of the capacity of the State hospitals.

Both the number of first admissions to hospitals for mental disease and the number of patients present in the institutions are shown separately by States. The figures are based on reports furnished to the Bureau of the Census by the institutions, through the cooperation of the State agencies in charge of such institutions.

The figures for 1926 are preliminary and subject to correction.

First admissions during the year to State hospitals for mental disease, 1926 and 1922

Division and State	Number of institutions in operation, 1926	First admissions during the year			
		1926	1922	Number per 100,000 of general population ¹	
				1926	1922
United States ²	165	52,591	50,467	46.3	46.2
New England:					
Maine.....	2	371	339	47.0	43.7
New Hampshire.....	1	375	306	82.6	68.5
Vermont.....	1	160	164	45.4	46.5
Massachusetts.....	12	2,887	2,940	68.8	73.7
Rhode Island.....	1	391	346	56.4	54.1
Connecticut.....	2	950	918	59.2	62.8
Middle Atlantic:					
New York.....	16	7,711	7,218	68.2	67.2
New Jersey.....	2	1,288	1,317	35.0	39.4
Pennsylvania.....	9	2,093	1,706	21.8	18.9
East North Central:					
Ohio.....	8	3,215	2,708	48.7	44.7
Indiana.....	6	1,233	955	39.5	31.8
Illinois.....	10	4,353	5,053	60.4	74.9
Michigan.....	5	1,313	1,236	29.9	31.5
Wisconsin.....	4	1,069	991	37.1	36.4
West North Central:					
Minnesota.....	6	1,309	1,295	49.4	52.2
Iowa.....	5	920	939	38.0	38.9
Missouri.....	4	1,182	1,139	33.8	33.1
North Dakota.....	1	236	242	36.8	37.6
South Dakota.....	1	201	168	29.2	25.5
Nebraska.....	3	574	571	41.4	43.0
Kansas.....	4	677	632	37.2	35.3
South Atlantic:					
Delaware.....	1	163	96	67.9	41.9
Maryland ³	4	335	628	(⁴)	42.0
District of Columbia.....	1	641	888	121.4	188.9
Virginia.....	4	1,259	1,360	50.0	57.0
West Virginia.....	4	725	687	43.4	44.7
North Carolina.....	3	1,162	851	40.7	31.9
South Carolina.....	1	601	643	32.9	37.1
Georgia.....	1	953	652	30.4	21.9
Florida.....	1	1,024	688	77.8	61.9
East South Central:					
Kentucky.....	3	1,161	1,169	46.0	47.6
Tennessee.....	3	744	811	30.1	34.0
Alabama.....	2	897	627	35.5	26.0
Mississippi.....	2	1,068	922	56.3	51.5
West South Central:					
Arkansas ⁴	1	(⁴)	731	(⁴)	40.5
Louisiana.....	2	592	547	30.8	29.7
Oklahoma.....	3	1,078	695	46.0	32.5
Texas.....	5	1,815	1,357	34.2	27.7
Mountain:					
Montana.....	1	311	317	44.7	52.7
Idaho ⁵	2	38	144	(⁴)	31.0
Wyoming.....	1	52	61	22.0	29.2
Colorado.....	1	377	399	35.6	40.6
New Mexico ⁴	1	(⁴)	92	(⁴)	24.9
Arizona.....	1	169	209	38.0	55.9
Utah.....	1	173	183	33.7	38.7
Nevada.....	1	64	42	82.7	54.2
Pacific:					
Washington.....	3	927	871	60.3	61.3
Oregon.....	2	686	709	78.2	86.8
California.....	6	3,121	2,891	72.3	77.2
Federal hospital for Indians.....	1	7	14	-----	-----

¹ Based on estimated population July 1.² Returns for 1926 incomplete. Ratios of patients to the general population for both 1926 and 1922 represent total for States with complete returns for 1926, and therefore do not include Arkansas, Idaho, Maryland, and New Mexico.³ Returns for State incomplete for 1926, as one hospital failed to report.⁴ No census report received for 1926.

Patients in State hospitals for mental disease on January 1 of 1927 and prior years

Division and State	Jan. 1, 1927	Jan. 1, 1926	Jan. 1, 1923	Jan. 1, 1922	Jan. 1, 1910	Number per 100,000 of general population ¹				
						1927	1926	1923	1922	1910
United States ²	250,890	243,400	229,664	222,406	159,096	219.1	215.5	209.4	205.8	176.2
New England:										
Maine.....	1,903	1,868	1,638	1,798	1,258	240.6	237.1	236.2	232.0	169.5
New Hampshire.....	1,560	1,519	1,509	1,417	876	343.6	335.3	312.3	317.7	203.5
Vermont.....	835	829	784	757	572	236.9	235.2	222.5	214.8	160.7
Massachusetts.....	16,846	16,495	15,285	15,164	11,310	399.2	395.5	380.8	382.5	336.0
Rhode Island.....	1,735	1,673	1,485	1,438	1,101	248.2	243.9	229.5	227.2	202.9
Connecticut.....	4,829	4,654	4,376	4,201	3,059	297.9	292.9	295.7	290.1	274.4
Middle Atlantic:										
New York.....	43,538	42,361	39,590	38,178	30,151	383.1	377.1	365.3	357.7	330.8
New Jersey.....	5,850	5,562	5,090	4,861	3,398	157.5	152.8	150.3	146.7	133.9
Pennsylvania.....	12,138	11,962	10,545	10,266	8,556	125.5	125.3	115.7	114.2	111.6
East North Central:										
Ohio.....	13,844	13,401	12,811	12,443	9,088	208.0	205.1	209.1	207.0	190.6
Indiana.....	6,441	6,252	5,780	5,627	4,312	205.3	201.0	191.7	188.3	159.7
Illinois.....	20,090	20,537	18,764	18,214	10,585	285.4	287.3	275.9	271.9	187.7
Michigan.....	7,765	7,609	7,392	7,259	5,846	174.8	175.3	185.4	186.8	208.0
Wisconsin.....	1,778	1,715	1,297	1,049	1,256	61.3	59.9	47.3	38.7	53.8
West North Central:										
Minnesota.....	7,259	7,055	6,632	6,408	4,737	272.0	268.1	265.0	262.3	228.2
Iowa.....	5,347	5,219	5,002	4,823	4,122	220.6	215.6	207.2	200.1	185.3
Missouri.....	5,753	5,631	5,242	4,970	4,222	164.2	161.3	152.2	144.8	128.2
North Dakota.....	1,400	1,337	1,269	1,245	628	218.3	208.5	197.0	193.0	168.8
South Dakota.....	1,317	1,300	1,207	1,180	804	190.0	189.8	182.3	180.7	137.7
Nebraska.....	3,258	3,255	2,926	2,845	1,990	234.4	236.2	219.2	215.0	166.9
Kansas.....	3,697	3,592	3,295	3,168	2,812	202.7	197.7	183.6	177.4	166.3
South Atlantic:										
Delaware.....	575	580	518	507	441	238.6	242.7	224.2	222.4	218.0
Maryland ³	1,910	1,903	3,297	3,152	1,532	(⁴)	(⁴)	218.8	211.7	118.3
District of Columbia.....	4,121	4,100	3,931	3,761	2,890	771.7	786.9	824.1	808.8	872.9
Virginia.....	5,603	5,502	5,012	4,786	3,635	221.3	219.8	208.7	201.8	176.3
West Virginia.....	2,315	2,195	2,134	2,142	1,722	137.6	132.7	137.3	140.5	141.0
North Carolina.....	4,665	4,519	3,575	3,243	2,489	162.1	159.4	132.9	122.4	112.8
South Carolina.....	2,558	2,533	2,400	2,354	1,541	139.4	139.6	137.5	136.4	101.7
Georgia.....	4,848	4,640	3,972	3,896	3,082	153.7	148.7	132.3	131.3	118.1
Florida.....	2,584	2,383	1,950	1,784	849	192.8	184.7	170.9	164.6	112.8
East South Central:										
Kentucky.....	4,831	4,810	4,635	4,464	3,487	190.9	191.2	188.1	182.3	152.3
Tennessee.....	3,084	2,941	2,746	2,579	1,836	124.6	119.7	114.7	108.5	84.0
Alabama.....	3,228	3,159	2,718	2,941	2,039	127.2	125.8	112.0	122.5	95.4
Mississippi.....	2,854	2,727	2,537	2,510	1,978	159.4	152.3	141.7	140.2	110.1
West South Central:										
Arkansas ⁴	(⁴)	(⁴)	1,990	2,001	1,092	(⁴)	(⁴)	109.4	111.3	69.4
Louisiana.....	3,458	3,312	3,022	2,892	1,915	179.5	173.5	163.3	157.7	115.6
Oklahoma.....	3,596	3,358	2,873	2,760	471	160.9	144.9	132.6	130.1	28.4
Texas.....	7,619	6,825	6,436	6,124	3,985	142.3	129.7	130.1	126.1	102.3
Mountain:										
Montana.....	1,460	1,383	1,438	1,451	607	207.1	202.2	234.6	244.7	185.3
Idaho ⁵	1,279	1,290	609	589	388	(⁴)	(⁴)	129.3	128.3	119.2
Wyoming.....	390	358	309	291	162	159.7	153.6	145.1	140.6	111.0
Colorado.....	2,324	2,200	2,017	1,983	882	218.0	210.1	203.3	203.4	110.4
New Mexico ⁶	(⁴)	(⁴)	392	372	219	(⁴)	(⁴)	105.1	100.8	66.9
Arizona.....	684	658	554	467	337	151.3	150.9	145.0	127.2	164.9
Utah.....	773	763	697	689	342	149.2	149.9	145.8	146.9	91.6
Nevada.....	221	211	205	215	230	255.5	272.6	264.8	277.8	280.9
Pacific:										
Washington.....	4,150	4,025	3,765	3,620	1,987	267.7	264.1	262.2	256.6	174.0
Oregon.....	1,877	1,700	2,406	2,316	1,565	212.3	195.4	291.6	285.2	232.6
California.....	13,047	12,397	11,507	11,055	6,560	298.2	291.8	301.5	299.4	275.9
Federal hospital for Indians.....	93	96	90	89	60					

¹ Based on estimated population Jan. 1, 1927, 1926, 1923, and 1922, and enumerated population Apr. 15, 1910.² Ratios of patients to general population represent for each year the total for States with complete returns for 1926-1927, and therefore do not include Arkansas, Idaho, Maryland, and New Mexico.³ Returns for State incomplete for 1926 and 1927, as one hospital failed to report.⁴ No census report received for 1926-1927.

PUBLIC HEALTH ENGINEERING ABSTRACTS

Sodium Aluminate for Softening Water at Hinsdale, Illinois. Harvey Menold. *Engineering News Record*, vol. 100, No. 16, April 19, 1928, p. 616. (Abstract by H. B. Foote.)

Raw deep-well water at a hardness of 468 p. p. m. and an alkalinity of 375 p. p. m.

Under the former method of treatment the following chemicals were used with the results noted:

3.15 pounds hydrated lime.....	hardness..	157 p. p. m.
0.933 pound soda ash.....	alkalinity..	147 p. p. m.
0.125 pound alum per 1,000 gal.....	caustic alkalinity..	23 p. p. m.

Under the new treatment in which sodium aluminate was included the following results were obtained:

3.3 pounds hydrated lime.....	hardness..	98 p. p. m.
0.75 pound soda ash.....	alkalinity..	85 p. p. m.
0.28 pound liq. sodium aluminate.....	caustic alkalinity..	15 p. p. m.

A reduction was noted of 4.1 per cent in cost of chemicals, 36 per cent in amount of gas for recarbonation, and 64 per cent in amount of filter wash water. Scale formation on walls of filters and basins was removed. A test using 84 per cent solid sodium aluminate is to be tried in place of 34 per cent in liquid form.

Liability for Water-Borne Typhoid. James A. Tobey. *Public Works*, vol. 59, No. 4, April, 1928, pp. 148-150. (Abstract by L. M. Fisher.)

As a result of a score or more of decisions in eight States up to 1927, it is now the settled law in this country that an individual or corporation, whether private or public, which supplies water for human consumption, must exercise every reasonable effort to ascertain the quality of the water and take every possible precaution to make it safe. Failure to exercise reasonable care in apprehending danger and taking the necessary step to avert it, renders the corporation which supplies it liable for negligence.

In order to recover, the aggrieved party must prove by preponderance of the evidence these three propositions: (1) That the typhoid fever was actually contracted by the water furnished; (2) that the person or corporation supplying the water was guilty of negligence in allowing, or failing to prevent, the contamination; and (3) that the injured party himself has exercised due care and was not guilty of contributory negligence.

The consumer is not required to investigate the water supply and ascertain possible sources of pollution. That duty rests on the waterworks, which must also take positive action, as necessary, for the protection of its customers.

Neglecting these points is poor business for any water company. Considerably more than \$50,000 has been awarded for injuries and deaths due to typhoid fever. One steamship company paid \$110,000 to numerous persons who contracted typhoid from water furnished on a steamship.

A bibliography is appended.

The Residual Germicidal Action of Water Treated with Ultra-Violet Light. John F. Norton. *American Journal of Public Health and the Nation's Health*, vol. 18, No. 4, April, 1928, pp. 476-479. (Abstract by A. L. Dopmeyer.)

An account is given of experiments made at Chicago to determine whether water exposed to ultra-violet light retains some germicidal activity to destroy added bacteria.

Thirty experiments were made, the procedure of which is described in this article. The experiments were made with Rawlins strains of *B. typhosus*, strains of *S. aureus* and with cultures of Friedlander's bacillus.

The conclusions drawn are that: (1) Water exposed to ultra-violet light may retain a slight germicidal power which can be detected under certain conditions; (2) this activity was detected with *B. typhosus* and with Friedlander's bacillus, but not with *S. aureus*; (3) a limited series of salt solutions was irradiated, but no residual action was noted; (4) phenol, peptone, and meat extract also give negative results; (5) bacterial cells killed by exposure to ultra-violet light appeared to exhibit a residual germicidal action, but our data are too meager to warrant any definite statements. Further work on this action is being carried on.

Disposal of Industrial Sewage. A. O. True. *Journal North Carolina Section American Water Works Association*, vol. 5, No. 1, 1927, pp. 71-77. (Abstract by A. I. Howd.)

The author uses the term "industrial sewage" for that class of liquid wastes resulting from manufacturing operations. He points out that, owing to the nature of industrial wastes, "natural or artificial oxidation processes can not usually be relied upon entirely to remove dissolved and colloidal impurities, but recourse must be had to some system of chemical treatment or conditioning which will bring about a precipitation of the contained impurities and unsightly colors." No attempt is made to give data upon methods of disposal of such wastes. The author states that conclusive data upon the settlement of the problem are very meager.

Studies on Controlling *Psychoda alternata* Say in Sprinkling Filters. Dagmar H. Peterson. Report of the Department of Sewage Disposal of the New Jersey Agricultural Experiment Station, year ending June 30, 1927, pp. 300-310. (Abstract by H. E. Hargis.)

The life cycle of the *Psychoda* is given; it usually lasts about 12 days. Experiments were made to determine the effectiveness of insecticides, including approximately 50 commercial and laboratory preparations. The following results were found: No economical method for controlling *Psychoda alternata* was found aside from flooding the filter bed. Oils were found better than emulsions. Orthodichlorobenzene mixed with an equal part of kerosene killed over 90 per cent of the larvæ when a liter per square foot was applied. "Flit," at 75 c. c. per square foot, was equally satisfactory. Para-dichlorobenzene in crystalline form caused a high percentage of deaths when 50 grams per square foot were applied. Carbon bisulphide was lethal in an emulsion of 1:100. The chlorine, in the amount applied, was too expensive and was never lethal to the *Psychoda* larvæ. Continuous application of chlorine reduced the number of larvæ, but not sufficiently to warrant the expense. Flooding the filter beds greatly decreased the numbers, but the larvæ were not killed.

Treatment of Slaughterhouse Waste in Holland. Willem Rudolfs and H. Kesener. *Public Works*, vol. 59, No. 4, April, 1928, pp. 151-154. (Abstract by L. M. Fisher.)

The important features of the plant, which treats a small quantity, 30,400 gallons, of strong slaughterhouse wastes, are: (a) Surface aeration produced by revolving street brushes which are submerged from $\frac{1}{4}$ to $\frac{1}{2}$ inch in the liquid. Submerged wooden paddles keep currents moving; (b) great reduction in volatile matter, oxygen consumed, and alkalinity, and considerable formation of nitrates. Reduction in alkalinity is 68 per cent. American results taken from Public Health Bulletin No. 132 range from 19.5 per cent to 27.5 per cent reduction for domestic sewage; (c) flexibility of operation; aeration can be increased by dipping the brushes a little deeper; and (d) low construction and operation costs are claimed.

Change in pH of Fresh Sewage Solids. C. E. Keefer, *Public Works*, vol. 59, No. 4, April, 1928, pp. 137-138. (Abstract by L. M. Fisher.)

Experiments at Baltimore with solids collected at the influent end of sewage works and in the suction chamber of the pumping station indicate that the pH of the solids, determined colorimetrically, changed from 6.8 to 5.1 in 48 hours when kept in glass at 20° C.

In another experiment, three one-quart jars were placed near each other in the settling tanks and examined on four separate occasions after 24, 48, and 72 hours. In each case the pH was 5.5, 5.3, and 5.1, respectively.

Improving Waste Disposal at Garbage Hog Farm. Anon. *Engineering News-Record*, vol. 100, No. 18, May 3, 1928, pp. 692-695. (Abstract by H. B. Foote.)

Equipment and operation of the Fontana plant, fifty miles east of Los Angeles, are described in detail. The plant covers 240 acres, handles 400 tons of table waste per day, feeds 44,000 animals, and produces a commercial fertilizer of sufficient nitrogen content to be sought by orange growers.

The article describes in detail the methods employed in handling and producing fertilizer from the refuse garbage, manure, and wastes from the enterprise. Electric motors and mechanical devices are employed wherever possible to reduce the man power. Investigation has been necessary in the development of nearly every phase of the work. Types of drying floors, grinders, and other machinery have been developed for the special purposes. Prices received for the product range from \$5 to \$8 per ton.

Changes in Refuse Collection and Disposal in Akron, Ohio. Harrison P. Eddy. *The American City*, vol. 38, No. 4, April, 1928, pp. 91-94. (Abstract by J. B. Harrington.)

In this article the author discusses the more important phases of refuse collection and disposal in Akron, Ohio, as set forth by the firm of Metcalf & Eddy in a recent report to the city officials.

In 1915, the city constructed a garbage reduction plant which was operated until 1919. Following an explosion in 1919 the city entered into a contract for the sale of municipally collected garbage to a piggery. In 1926 a further contract was entered into whereby the city was to pay the contractor for the disposal of the garbage. At the present time the city collects garbage only. A discussion, however, of the approved methods of handling all kinds of refuse is given, together with the methods of collection, collection vehicles, methods of disposal, and personnel. As a result of a detailed comparison of the various methods of disposal it was recommended that the city adopt incineration of mixed refuse.

Refuse Separation Plant, Royton, Lancaster: Capital and Working Costs. J. Whitworth. *Surveyor*, vol. 73, No. 1885, March 9, 1928, p. 298. (Abstract by W. M. Olson.)

This article gives plan and costs of reorganizing the urban refuse disposal system in 1926, and of its operation. The new plant comprises a traveling table of iron bars openly spaced, an underbelt to convey fine stuff to an elevator and revolving screen, conveyors for vegetable refuse, a magnetic separator, a small incinerator, a tin press, and a paper baler. Capacity is 7,000 tons per year. Refuse is separated into dust (54 per cent), cinders (35 per cent), tins (1.33 per cent), paper (1 per cent), pots and glass (1.5 per cent), and waste matter (7.17 per cent). Tins and paper are sold. The plant gives satisfaction. Reorganization cost £6,000. Operation costs 3s. 3d. per ton.

Report of Bureau of Malaria Control 1926-27. Anon. *Porto Rico Review of Public Health and Tropical Medicine*, vol. 3, No. 7, January, 1928, pp. 279-286. (Abstract by J. L. Robertson.)

This report covers the campaign at Salinas, surveys at Luquilla, Santa Isabel, Guayanna and Yauco, and observations at Humacao.

At Salinas an epidemic broke out in the fall and winter of 1925. Emergency and temporary control measures were instituted following a survey completed in February, 1926. Surveys at the end of the epidemic, six months later, and one year later, showed malaria highly endemic, with a tendency to become epidemic.

A. albimanus is the important vector. Annual rainfall does not exceed 25 inches; but this may be concentrated, thus favoring breeding. Irrigation is practiced throughout the year, with accompanying difficulties. The most difficult areas to handle are the lowlands near the ocean; during dry seasons there is no water on them, but following heavy rains they are wet for several months.

The reservoirs and seepage areas are treated weekly with Paris green. Drainage work is carried on, old drainage channels are cleaned, deepened, and widened, and tidegates installed.

Heavy rains just as the year was closing and into the month of July have greatly complicated the work and have emphasized again the importance of the lowlands. With work steadily progressing and an experienced personnel on hand, the writer foresees a successful campaign.

Water impounded by a dam in the Guajataca River, to provide irrigation for some 15,000 acres, will inundate a little less than 1,000 acres in the central portion of Quebradillas and Isabela. This area was studied especially to determine whether malaria already existed and to prevent the development of an excess of the disease if conditions should favor the production of *Anopheles* after the reservoir shall have been filled.

Observations on the Blood-Feeding Habits of *A. albimanus* and *grahamii*.—Report of Bureau of Malaria Control. Anon. *Porto Rico Review of Public Health and Tropical Medicine*, vol. 3, No. 9, March, 1928, pp. 376-378. (Abstract by J. H. O'Neill.)

Test houses were constructed in which men and animals were placed over night. Mosquitoes caught in the house in the morning were examined, the precipitin test as reported by Bull and King being used.

There is a marked difference in the attractiveness of man for *grahamii* and for *albimanus*. *Grabhamii* does not enter houses much in search of human blood; animals are much more preferred, especially the horse and ox. Considerable protection is given if horses and oxen are between houses and source of mosquitoes during the night.

Observations are being made to determine whether it is possible to make use of a large number of oxen in protecting certain regions that are difficult to sanitize.

An Anopheline Survey of the Bengal Districts. C. Strickland and K. L. Chowdhury. *Indian Journal of Medical Research*, vol. 15, No. 2, October, 1927, pp. 377-426. (Abstract by W. L. Havens.)

A recent six months' anopheline survey was conducted in Bengal in order to obtain an indication of any differential local prevalence. It is becoming widely held that identification of implicated species promises well for future preventive work. In all, there were collected and registered 15,000 larvae, but only 9,000 were examined, the remainder being lost. Tables are given in the article to show the different species found during the survey, as well as the different breeding places of each species. The area covered included 25 of the 27 districts in Bengal.

DEATHS DURING WEEK ENDED JULY 14, 1928

Summary of information received by telegraph from industrial insurance companies for the week ended July 14, 1928, and corresponding week of 1927. (From the Weekly Health Index, July 19, 1928, issued by the Bureau of the Census, Department of Commerce)

	Week ended July 14, 1928	Corresponding week, 1927
Policies in force.....	71, 246, 274	68, 084, 353
Number of death claims.....	12, 737	11, 947
Death claims per 1,000 policies in force, annual rate.....	9. 3	9. 1

Deaths from all causes in certain large cities of the United States during the week ended July 14, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927. (From the Weekly Health Index, July 19, 1928, issued by the Bureau of the Census, Department of Commerce)

City	Week ended July 14, 1928		Annual death rate per 1,000 corresponding week, 1927	Deaths under 1 year		Infant mortality rate, week ended July 14, 1928 ¹
	Total deaths	Death rate ²		Week ended July 14, 1928	Corresponding week, 1927	
Total (68 cities).....	6, 548	11. 2	11. 3	678	649	55
Akron.....	36			5	7	54
Albany.....	47	20. 4	16. 1	4	3	82
Atlanta.....	68	13. 9	15. 3	12	14	
White.....	34		10. 1	2	2	
Colored.....	34	(³)	27. 5	10	12	
Baltimore.....	195	12. 3	12. 5	17	17	54
White.....	143		11. 6	12	14	48
Colored.....	52	(³)	17. 7	5	3	78
Birmingham.....	63	14. 8	17. 0	10	10	86
White.....	26		14. 9	3	4	41
Colored.....	37	(³)	20. 3	7	6	158
Boston.....	191	12. 5	10. 6	27	21	75
Bridgeport.....	24			1	4	18
Buffalo.....	121	11. 7	12. 5	23	7	99
Cambridge.....	35	14. 5	10. 9	4	1	71
Camden.....	20	7. 7	18. 4	3	5	48
Canton.....	26	11. 6	10. 1	6	3	143
Chicago.....	615	10. 2	10. 9	44	54	38
Cincinnati.....	119	15. 0	14. 3	10	10	60
Cleveland.....	184	9. 5	10. 5	21	20	57
Columbus.....	74	13. 0	12. 5	4	5	37
Dallas.....	44	10. 6	11. 3	5	6	
White.....	34		9. 6	4	3	
Colored.....	10	(³)	22. 8	1	3	
Denver.....	65	11. 6	12. 2	4	6	
Des Moines.....	25	8. 6	13. 3	1	5	17
Detroit.....	242	9. 2	9. 5	34	25	53
Duluth.....	24	10. 7	9. 5	2	1	47
El Paso.....	33	14. 6	14. 7	5	4	
Erie.....	18			1	0	21
Fall River.....	22	8. 6	11. 8	2	6	34
Flint.....	30	10. 5	9. 5	3	4	38
Fort Worth.....	33	10. 3	12. 7	4	3	
White.....	25		11. 9	4	2	
Colored.....	8	(³)	18. 6	0	1	
Grand Rapids.....	32	10. 2	10. 0	4	0	60
Houston.....	58			9	7	
White.....	40			6	4	
Colored.....	18	(³)		3	3	
Indianapolis.....	70	9. 6	13. 1	5	7	38
White.....	59		12. 8	4	7	35
Colored.....	11	(³)	15. 1	1	0	61
Jersey City.....	70	11. 3	13. 5	11	12	82

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.

³ Data for 68 cities.

⁴ Deaths for week ended Friday, July 13, 1928.

⁵ In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 25; Richmond, 32; and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended July 14, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927. (From the Weekly Health Index, July 19, 1928, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended July 14, 1928		Annual death rate per 1,000 corresponding week, 1927	Deaths under 1 year		Infant mortality rate, week ended July 14, 1928
	Total deaths	Death rate		Week ended July 14, 1928	Corresponding week, 1927	
Kansas City, Kans.	33	14.6	13.8	6	5	127
White	22		14.6	1	4	25
Colored	11	(^b)	9.8	5	1	726
Kansas City, Mo.	83	11.1	10.3	3	5	21
Knoxville	33	16.4	16.9	5	8	109
White	25		12.2	4	5	97
Colored	8	(^b)	51.3	1	3	213
Los Angeles	228			21	36	60
Louisville	61	9.7	11.7	5	7	42
Lowell	20	9.5	8.0	5	3	105
Lynn	18	8.9	8.5	2	3	50
Memphis	83	22.8	21.0	15	7	176
White	35		14.0	7	3	131
Colored	48	(^b)	33.7	8	4	251
Milwaukee	109	10.5	9.2	15	11	67
Minneapolis	78	8.9	7.8	10	3	60
Nashville	47	17.7	14.8	8	7	126
White	33		15.8	7	6	149
Colored	14	(^b)	12.1	1	1	60
New Bedford	22	9.6	9.2	3	4	65
New Haven	40	11.1	10.2	2	4	28
New Orleans	139	16.9	20.0	12	22	58
White	90		15.4	9	10	65
Colored	49	(^b)	33.1	3	12	44
New York	1,227	10.7	10.7	121	125	49
Bronx Borough	155	8.5	8.4	7	22	21
Brooklyn Borough	418	9.5	9.2	49	43	49
Manhattan Borough	500	14.9	14.7	56	45	66
Queens Borough	109	6.7	7.5	6	12	24
Richmond Borough	45	15.6	14.6	3	3	54
Newark, N. J.	77	8.5	8.6	10	7	51
Oakland	50	9.5	9.0	5	6	54
Oklahoma City	31			6	2	
Omaha	48	11.3	10.2	3	4	35
Paterson	33	11.9	10.9	2	4	35
Philadelphia	435	11.0	10.6	50	41	67
Pittsburgh	157	12.2	13.6	13	18	43
Portland, Oreg.	72			4	8	43
Providence	52	9.5	11.3	8	5	70
Richmond	51	13.7	13.0	6	7	78
White	25		9.2	2	4	41
Colored	26	(^b)	22.5	4	3	147
Rochester	73	11.6	9.6	7	9	57
St. Louis	214	13.2	11.4	13	12	43
St. Paul	59	12.2	10.8	6	1	57
Salt Lake City ⁴	28	10.6	6.1	4	1	65
San Antonio	70	16.8	12.8	12	12	
San Diego	36	15.7	19.0	3	4	57
San Francisco	139	12.4	11.3	5	8	31
Schenectady	16	9.0	10.1	0	3	0
Seattle	68	9.3	8.1	3	2	31
Somerville	19	9.7	8.7	1	1	35
Spokane	24	11.5	14.8	1	2	26
Springfield, Mass.	37	12.9	12.4	2	3	32
Syracuse	46	12.1	11.4	5	3	61
Tacoma	21	9.9	7.3	0	1	0
Toledo	77	12.9	10.4	8	4	77
Trenton	34	12.8	10.3	2	1	34
Washington, D. C.	121	11.5	13.3	14	14	80
White	80		12.4	7	4	58
Colored	41	(^b)	16.1	7	10	129
Waterbury	11			1	1	29
Wilmington, Del.	33	13.4	9.5	3	2	79
Worcester	27	7.1	10.7	6	2	73
Yonkers	18	7.8	9.7	6	3	137
Youngstown	41	12.3	8.6	3	6	40

⁴ Deaths for week ended Friday, July 13, 1928.

^b In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended July 21, 1928, and July 23, 1927

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 21, 1928, and July 23, 1927

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927
New England States:								
Maine.....	3	1	1		64	48	0	0
New Hampshire.....								
Vermont.....					18	25	0	0
Massachusetts.....	25	52	11	4	270	189	3	1
Rhode Island.....	2	3			110	1	0	0
Connecticut.....	13	16	1	2	148	21	0	1
Middle Atlantic States:								
New York.....	170	210		14	787	245	30	4
New Jersey.....	78	86			226	12	0	0
Pennsylvania.....	132	150			841	260	5	2
East North Central States:								
Ohio.....	20		3		223		5	
Indiana.....	8	25	4	5	41	18	0	0
Illinois.....	65	106	44	11	81	137	7	5
Michigan.....	57	58	1		227	65	4	4
Wisconsin.....	17	18	9	12	23	190	2	5
West North Central States:								
Minnesota.....	16	20	2	3	7	18	2	6
Iowa.....	1	11			3	9	2	1
Missouri ¹	20	21	10		39	17	2	0
North Dakota.....	2		1		10	1	0	1
South Dakota.....		6			8	8	0	0
Nebraska.....	3	4			4	12	0	0
Kansas.....	1	5	1	5	18	45	0	0
South Atlantic States:								
Delaware.....		2				1	0	0
Maryland ¹	11	32	1	2	38	6	2	0
District of Columbia.....		7				3		0
Virginia.....								
West Virginia.....	6		16		18		0	
North Carolina.....	10	16			56	356	0	0
South Carolina.....	4	15	220	97	7	64	0	0
Georgia.....	5	10	21	29	16	25	1	1
Florida.....	8	3	30		9	8	0	0

¹ New York City only.

² Figures for Missouri for 1928 are exclusive of Kansas City.

³ Week ended Friday.

*Cases of certain communicable diseases reported by telegraph by State health officers
for weeks ended July 21, 1928, and July 23, 1927—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927
East South Central States:								
Kentucky.....					19		0	
Tennessee.....	6	11	5	6	7	13	0	1
Alabama.....	7	17	21	15	34	62	3	0
Mississippi.....	10	4						0
West South Central States:								
Arkansas.....	2		22	3	39	21	0	0
Louisiana.....	12	12	4	10	16	83	1	0
Oklahoma.....	5	5	40	8	6	30	0	2
Texas.....	9	18	22	11	23	11	0	0
Mountain States:								
Montana.....	3	1			12	6	2	3
Idaho.....	3	2				1	0	0
Wyoming.....	5			1		10	0	0
Colorado.....	5	11			36	13	0	0
New Mexico.....	3		1		1		0	0
Arizona.....					4	1	1	0
Utah.....		1	2			3	0	0
Pacific States:								
Washington.....	2	3			7	92	1	0
Oregon.....	2	8	11	7	8	29	0	1
California.....	48	56	6	6	22	122	4	3

Division and State	Polio myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927
New England States:								
Maine.....	0	0	6	24	0	0	4	1
New Hampshire.....								
Vermont.....	0	0	5	1	0	0	0	0
Massachusetts.....	1	8	50	130	0	0	4	15
Rhode Island.....	0	0	5	11	0	0	0	2
Connecticut.....	3	0	14	11	0	0	2	2
Middle Atlantic States:								
New York.....	20	11	84	123	1	16	29	24
New Jersey.....	0	3	29	56	0	0	9	20
Pennsylvania.....	3	2	112	190	0	4	42	33
East North Central States:								
Ohio.....	4		59		26		11	
Indiana.....	1	0	20	30	19	67	3	9
Illinois.....	3	8	97	97	27	2	21	31
Michigan.....	0	4	100	73	23	17	5	11
Wisconsin.....	1	1	60	65	21	21	1	2
West North Central States:								
Minnesota.....	2	0	27	61	1	1	1	3
Iowa.....	0	1	11	18	27	14	3	3
Missouri.....	2	1	21	15	19	6	5	20
North Dakota.....	1	1	15	21	0	1	0	0
South Dakota.....	0	0	11		1	5	2	1
Nebraska.....	0	0	9	2	15	5	2	2
Kansas.....	2	2	17	19	31	5	9	16
South Atlantic States:								
Delaware.....	1	0	1	3	0	0	4	0
Maryland.....	4	1	10	14	0	0	15	14
District of Columbia.....		0		5		1		5
Virginia.....						3		
West Virginia.....	0		14					
North Carolina.....	2	0	5	13	10	6	51	106
South Carolina.....	4	0	1	9	3	8	87	94
Georgia.....	1	2	10	5	0	11	82	85
Florida.....	1	1	2	2	16	2	6	22

¹ Figures for Missouri for 1928 are exclusive of Kansas City.

² Week ended Friday.

³ Exclusive of Tulsa.

July 27, 1928

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Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 21, 1928, and July 23, 1927—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927	Week ended July 21, 1928	Week ended July 23, 1927
East South Central States:								
Kentucky.....	2		6		13		17	
Tennessee.....	0	1	3	12	13	9	63	184
Alabama.....	1	1	5	6	18	10	77	120
Mississippi.....	6	1	3	3	1	3	20	34
West South Central States:								
Arkansas.....	0	0	0		6	0	18	34
Louisiana.....	0	5	5	5	0	0	30	46
Oklahoma.....	0	2	7	7	20	12	47	63
Texas.....	2	2	8	11	12	26	16	14
Mountain States:								
Montana.....	0	0	3	7	5	2	5	3
Idaho.....	0	0	0	7	2	7	0	2
Wyoming.....	0	0	5	4	0	1	3	0
Colorado.....	0	0	30	15	2	2	0	2
New Mexico.....	0	22	4	8	1	1	10	3
Arizona.....	0	3	0		0	0	1	3
Utah.....	0	1	2	8	2	11	0	3
Pacific States:								
Washington.....	2	0	14	7	17	10	4	5
Oregon.....	0	0	2	6	29	15	2	4
California.....	2	62	58	69	21	7	12	14

¹ Week ended Friday.² Exclusive of Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Mea- sles	Pel- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
May, 1928										
Colorado.....	0	46			846		3	370	39	8
District of Columbia.....	1	68	11		950		3	202	4	3
Georgia.....	1	35	376	73	746	47	0	65	22	38
West Virginia.....	7	36	996		356		2	108	153	21
June, 1928										
Alabama.....	2	35	442	279	864	155	2	17	63	100
Colorado.....	0	17	1		319		2	72	11	7
Georgia.....	1	20	156	203	231	159	0	47	12	97
Louisiana.....	4	52	118	132	264	176	3	24	48	103
Massachusetts.....	9	251	98	1	2,919	1	8	788	0	34
Michigan.....	0	336	20	1	3,710		3	930	206	23
New Jersey.....	17	615	126	1	5,020		5	478	1	15
Ohio.....	26	269	380	1	3,866		4	441	72	33
Vermont.....	0	1			248		0	32	0	1

<i>May, 1928</i>		<i>June, 1928—Continued</i>	
Chicken pox:	Cases	Leprosy:	Cases
Colorado.....	215	Louisiana.....	3
District of Columbia.....	55	Lethargic encephalitis:	
Georgia.....	140	Alabama.....	2
West Virginia.....	124	Louisiana.....	2
Conjunctivitis (acute infectious):		Massachusetts.....	7
Georgia.....	2	Michigan.....	1
Dysentery:		Ohio.....	5
Georgia.....	78	Mumps:	
German measles:		Alabama.....	79
Colorado.....	56	Colorado.....	255
Hookworm disease:		Georgia.....	35
Georgia.....	19	Louisiana.....	3
Impetigo:		Massachusetts.....	439
Colorado.....	2	Michigan.....	434
Lethargic encephalitis:		Ohio.....	342
District of Columbia.....	2	Vermont.....	42
Georgia.....	1	Ophthalmia neonatorum:	
Mumps:		Colorado.....	1
Colorado.....	405	Massachusetts.....	108
Georgia.....	78	New Jersey.....	3
Paratyphoid fever:		Ohio.....	105
Georgia.....	8	Paratyphoid fever:	
Rocky Mountain spotted fever:		Colorado.....	1
Colorado.....	2	Georgia.....	3
Scabies:		Louisiana.....	7
Colorado.....	3	Ohio.....	2
Septic sore throat:		Puerperal septicemia:	
Georgia.....	25	Ohio.....	4
Tetanus:		Rabies (in man):	
Georgia.....	3	Ohio.....	1
Typhus fever:		Rocky Mountain spotted fever:	
Georgia.....	4	Colorado.....	2
Whooping cough:		Septic sore throat:	
Colorado.....	195	Georgia.....	33
District of Columbia.....	29	Massachusetts.....	17
Georgia.....	84	Michigan.....	9
West Virginia.....	29	Ohio.....	44
<i>June, 1928</i>		Tetanus:	
Chicken pox:		Georgia.....	1
Alabama.....	103	Louisiana.....	4
Colorado.....	203	Massachusetts.....	3
Georgia.....	60	Ohio.....	3
Louisiana.....	13	Trachoma:	
Massachusetts.....	569	Massachusetts.....	4
Michigan.....	496	New Jersey.....	1
New Jersey.....	634	Ohio.....	9
Ohio.....	679	Trichinosis:	
Vermont.....	63	New Jersey.....	1
Dengue:		Tularaemia:	
Alabama.....	4	Georgia.....	1
Georgia.....	2	Louisiana.....	1
Dysentery:		Typhus fever:	
Georgia.....	281	Alabama.....	7
Louisiana.....	4	Georgia.....	4
Massachusetts.....	2	Undulant (Malta) fever:	
Ohio.....	1	Georgia.....	2
German measles:		Whooping cough:	
Colorado.....	4	Alabama.....	124
Massachusetts.....	53	Colorado.....	145
New Jersey.....	814	Georgia.....	108
Ohio.....	49	Louisiana.....	71
Hookworm disease:		Massachusetts.....	517
Georgia.....	2	Michigan.....	662
Louisiana.....	17	New Jersey.....	553
Impetigo:		Ohio.....	581
Colorado.....	6		
Lead poisoning:			
Massachusetts.....	3		
New Jersey.....	1		
Ohio.....	14		

PLAGUE-INFECTED GROUND SQUIRRELS IN CALIFORNIA

The director of the State Department of Public Health of California, under date of July 11, 1928, reported that plague infection had been proved by animal inoculation in two lots of ground squirrels from Monterey County, Calif., one lot from a ranch 12 miles east of Bradley and the other lot from a ranch 11 miles east of Bradley.

On July 17, 1928, two additional lots of ground squirrels were proved plague infected, one lot from a ranch 2½ miles west of Santa Margarita, San Luis Obispo County, Calif., and the other lot from a ranch 6 miles north of Cayucos, San Luis Obispo County, Calif.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 99 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,575,000. The estimated population of the 94 cities reporting deaths is more than 30,930,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended July 7, 1928, and July 9, 1927

	1928	1927	Esti- mated expec- tancy
<i>Cases reported</i>			
Diphtheria:			
42 States.....	976	1,197	-----
99 cities.....	523	722	609
Measles:			
41 States.....	5,701	3,808	-----
99 cities.....	1,950	1,175	-----
Poliomyelitis: 42 States.....	37	82	-----
Scarlet fever:			
42 States.....	1,232	1,697	-----
99 cities.....	449	591	448
Smallpox:			
42 States.....	450	519	-----
99 cities.....	34	95	42
Typhoid fever:			
42 States.....	504	908	-----
99 cities.....	84	94	101
<i>Deaths reported</i>			
Influenza and pneumonia: 94 cities.....	463	363	-----
Smallpox: 94 cities.....	0	0	-----

City reports for week ended July 7, 1928

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible but no year earlier than 1919 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population, July 1, 1926, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland.....	76,400	0	0	0	0	0	5	0	2
New Hampshire:									
Concord.....	122,546	0	0	0	0	1	6	0	0
Vermont:									
Barre.....	110,008	0	0	0	0	0	0	0	0
Burlington.....	124,089	2	0	0	0	0	4	0	0
Massachusetts:									
Boston.....	787,000	19	39	13	3	1	31	1	5
Fall River.....	131,000	1	2	5	0	0	24	0	2
Springfield.....	145,000	4	1	2	0	0	8	3	1
Worcester.....	103,000	1	2	0	0	0	22	1	0
Rhode Island:									
Pawtucket.....	71,000	0	1	0	0	0	0	0	0
Providence.....	275,000	0	4	2	0	0	156	0	2
Connecticut:									
Bridgeport.....	(?)	2	4	3	0	0	12	0	4
Hartford.....	164,000	3	3	2	0	1	37	3	4
New Haven.....	182,000	2	1	0	0	1	13	3	2
MIDDLE ATLANTIC									
New York:									
Buffalo.....	544,000	14	8	8	2	0	8	7	9
New York.....	5,924,000	48	173	211	14	12	515	11	102
Rochester.....	321,000	4	6	4	-----	0	70	10	1
Syracuse.....	185,000	15	3	0	-----	0	40	6	6
New Jersey:									
Camden.....	131,000	0	4	3	0	0	10	2	1
Newark.....	459,000	16	8	24	0	0	37	7	5
Trenton.....	134,000	0	1	0	0	0	6	0	5
Pennsylvania:									
Philadelphia.....	2,008,000	16	47	34	0	4	219	14	35
Pittsburgh.....	637,000	13	14	18	0	5	23	10	18
Reading.....	114,000	2	2	0	0	0	6	1	1
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	411,000	5	5	0	0	0	3	1	5
Cleveland.....	660,000	24	20	11	1	1	155	12	8
Columbus.....	285,000	1	2	3	2	2	28	0	2
Toledo.....	295,000	14	3	0	2	1	23	2	2
Indiana:									
Fort Wayne.....	99,900	4	2	2	0	0	0	0	0
Indianapolis.....	367,000	9	3	8	0	0	56	3	9
South Bend.....	81,700	0	1	0	0	0	1	0	1
Terre Haute.....	71,900	0	0	0	0	0	2	0	1
Illinois:									
Chicago.....	3,048,000	98	55	60	4	2	35	4	42
Springfield.....	64,700	5	1	0	0	0	1	0	1
Michigan:									
Detroit.....	1,242,044	24	34	30	0	0	66	9	18
Flint.....	136,000	2	3	0	0	0	15	0	3
Grand Rapids.....	156,000	2	2	0	0	0	16	2	2

¹ Estimated, July 1, 1925.

² No estimate made.

³ Special census.

City reports for week ended July 7, 1928—Continued

Division, State, and city	Popula- tion, July 1, 1926, estimated	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths re- ported
			Cases, esti- mated expect- ancy	Cases re- ported	Cases re- ported	Deaths re- ported			
EAST NORTH CENTRAL— continued									
Wisconsin:									
Kenosha.....	52,700	15	1	0	0	0	0	1	1
Milwaukee.....	517,000	53	10	7	0	0	2	5	9
Racine.....	69,400	2	1	0	0	0	0	0	1
Superior.....	139,671	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	113,000	2	0	0	0	0	0	0	1
Minneapolis.....	434,000	38	10	3	0	3	16	0	4
St. Paul.....	248,000	6	8	0	0	0	3	0	5
Iowa:									
Davenport.....	152,469	2	0	0	0	-----	0	0	-----
Sioux City.....	78,000	0	0	0	0	-----	0	1	-----
Waterloo.....	36,900	2	0	0	0	-----	1	3	-----
Missouri:									
Kansas City.....	375,000	4	3	0	0	1	6	7	2
St. Joseph.....	78,400	0	0	0	0	0	0	0	0
St. Louis.....	830,000	5	21	12	0	0	58	3	-----
North Dakota:									
Fargo.....	126,403	0	0	0	0	0	0	0	1
Grand Forks.....	114,811	0	0	0	0	-----	0	0	-----
South Dakota:									
Aberdeen.....	115,036	1	0	0	0	-----	1	0	-----
Sioux Falls.....	130,127	0	0	0	0	-----	0	0	-----
Nebraska:									
Lincoln.....	62,000	2	0	0	0	0	0	2	0
Omaha.....	216,000	0	2	0	0	0	0	3	5
Kansas:									
Topeka.....	56,500	8	0	0	0	0	3	1	0
Wichita.....	92,500	0	0	0	0	0	1	0	0
SOUTH ATLANTIC									
Delaware:									
Wilmington.....	124,000	3	1	1	0	0	13	0	1
Maryland:									
Baltimore.....	808,000	13	12	5	1	1	20	14	10
Cumberland.....	133,741	0	0	0	0	0	0	0	0
Frederick.....	112,035	0	0	0	0	0	1	0	0
District of Columbia:									
Washington.....	528,000	3	5	20	0	0	83	0	5
Virginia:									
Lynchburg.....	138,493	3	0	0	0	0	4	0	0
Norfolk.....	174,000	0	0	0	0	0	1	0	0
Richmond.....	189,000	0	1	0	0	1	9	0	2
Roanoke.....	61,900	0	0	0	0	0	0	0	1
West Virginia:									
Charleston.....	50,700	1	0	0	1	0	0	0	0
Wheeling.....	156,208	2	1	0	0	0	1	1	1
North Carolina:									
Raleigh.....	130,371	0	0	0	0	0	1	0	0
Wilmington.....	37,700	2	0	0	0	0	0	0	1
Winston-Salem.....	71,800	1	0	1	0	0	0	1	0
South Carolina:									
Charleston.....	74,100	0	0	0	22	0	0	0	0
Columbia.....	41,800	1	0	1	0	0	0	1	2
Greenville.....	127,311	-----	0	-----	-----	-----	-----	-----	-----
Georgia:									
Atlanta.....	(7)	0	1	1	6	1	1	0	4
Brunswick.....	116,809	0	0	0	0	0	0	0	0
Savannah.....	94,900	0	1	0	0	0	0	0	3
Florida:									
Miami.....	131,286	0	2	3	0	0	1	0	3
St. Petersburg.....	47,629	-----	0	-----	-----	0	-----	-----	1
Tampa.....	102,000	0	0	0	148	0	1	0	2

1 Estimated, July 1, 1925.

2 No estimate made.

3 Special census.

City reports for week ended July 7, 1928—Continued

Division, State, and city	Population, July 1, 1926, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington.....	58,500	0	0	0	0	0	0	0	1
Louisville.....	311,000	1	1	0	0	0	5	1	4
Tennessee:									
Memphis.....	177,000	1	1	0	0	1	0	0	1
Nashville.....	137,000	2	0	1	0	0	5	0	2
Alabama:									
Birmingham.....	211,000	5	1	2	1	3	3	5	4
Mobile.....	66,800	0	0	0	0	0	0	0	1
Montgomery.....	47,000		0						
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith.....	131,643	0	0	0	0		0	0	
Little Rock.....	75,900	0	0	0	0	0	0	0	0
Louisiana:									
New Orleans.....	419,000	0	4	1	6	5	0	0	6
Shreveport.....	59,500	0	0	0	0	0	0	0	0
Oklahoma:									
Oklahoma City.....	(²)	2	1	0	6	1	4	0	1
Tulsa.....	133,000	1	0	1	0		0	0	
Texas:									
Dallas.....	203,000	0	2	1	0	0	5	1	0
Fort Worth.....	159,000	0	2	0	0	0	1	1	5
Galveston.....	49,100	0	0	0	3	0	0	0	1
Houston.....	1164,954	0	2	2	0	0	0	0	5
San Antonio.....	205,000	0	1	0	0	1	0	1	2
MOUNTAIN									
Montana:									
Billings.....	117,971	2	0	0	0	0	0	0	0
Great Falls.....	129,883	2	0	0	0	0	9	0	1
Helena.....	112,037	0	0	0	0	0	3	0	1
Missoula.....	112,698	2	0	0	0	0	1	0	0
Idaho:									
Boise.....	123,042	1	0	0	0	0	0	0	0
Colorado:									
Denver.....	285,000	12	8	3		1	19	26	1
Pueblo.....	43,900	2	1	0	0	0	8	0	0
New Mexico:									
Albuquerque.....	121,000	0	0	0	0	0	0	1	0
Utah:									
Salt Lake City.....	133,000	10	3	0	0	1	0	4	3
Nevada:									
Reno.....	112,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	(²)	11	4	1	0		8	1	
Spokane.....	109,000	0	1	0	0		0	0	
Tacoma.....	106,000	7	2	0	0	0	2	5	2
Oregon:									
Portland.....	1282,383	11	5	1	0	0	15	5	2
California:									
Los Angeles.....	(²)	12	37	14	8	0	2	16	12
Sacramento.....	73,400	2	2	0	0	0	1	1	5
San Francisco.....	567,000	18	10	4	1	0	2	4	4

¹ Estimated July 1, 1925.² No estimate made.

City reports for week ended July 7, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland.....	0	2	0	0	0	0	1	1	0	2	18
New Hampshire:											
Concord.....	0	0	0	0	0	0	0	0	0	0	19
Vermont:											
Barre.....	0	0	0	0	0	2	0	0	0	0	5
Burlington.....	0	0	0	0	0	0	0	0	0	0	4
Massachusetts:											
Boston.....	28	29	0	0	0	11	2	3	0	15	197
Fall River.....	1	1	0	0	0	3	1	0	0	4	28
Springfield.....	2	1	0	0	0	5	0	0	0	0	23
Worcester.....	4	3	0	0	0	0	0	0	0	1	43
Rhode Island:											
Pawtucket.....	0	0	0	0	0	0	0	0	0	0	19
Providence.....	3	13	0	0	0	8	0	0	0	3	64
Connecticut:											
Bridgeport.....	3	2	0	0	0	2	0	0	0	2	32
Hartford.....	2	2	0	0	0	1	0	0	0	8	33
New Haven.....	2	0	0	0	0	2	0	0	0	5	40
MIDDLE ATLANTIC											
New York:											
Buffalo.....	10	11	0	0	0	12	1	1	0	12	134
New York.....	75	60	0	0	0	98	17	11	3	88	1,277
Rochester.....	5	4	0	0	0	3	0	0	0	3	53
Syracuse.....	3	2	0	0	0	1	0	0	0	14	44
New Jersey:											
Camden.....	2	1	0	0	0	1	0	0	0	0	30
Newark.....	10	9	0	0	0	5	1	0	0	22	95
Trenton.....	1	1	0	0	0	4	0	1	0	2	32
Pennsylvania:											
Philadelphia.....	38	19	0	0	0	23	5	2	1	66	398
Pittsburgh.....	15	11	0	0	0	4	1	4	0	20	152
Reading.....	0	2	0	0	0	0	0	0	0	19	21
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	6	12	0	1	0	12	1	0	0	3	143
Cleveland.....	17	6	0	0	0	13	2	1	0	42	176
Columbus.....	3	2	0	0	0	6	0	0	0	16	74
Toledo.....	5	2	1	0	0	8	0	0	0	22	69
Indiana:											
Fort Wayne.....	1	3	0	0	0	1	0	0	0	0	22
Indianapolis.....	3	7	3	0	0	6	1	0	0	8	103
South Bend.....	1	0	0	0	0	0	0	0	0	0	19
Terre Haute.....	0	0	0	0	0	0	0	0	0	6	17
Illinois:											
Chicago.....	49	48	1	4	0	41	4	0	0	79	654
Springfield.....	1	1	0	0	0	1	0	1	0	6	29
Michigan:											
Detroit.....	35	41	3	1	0	30	4	3	1	60	274
Flint.....	2	4	0	2	0	2	0	0	0	13	24
Grand Rapids.....	5	2	0	0	0	0	0	1	1	1	24
Wisconsin:											
Kenosha.....	0	0	0	1	0	0	0	0	0	9	3
Milwaukee.....	11	19	1	0	0	6	0	0	0	14	108
Racine.....	2	0	0	0	0	0	0	0	0	3	4
Superior.....	1	1	2	0	0	0	0	0	0	0	2
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	4	3	1	0	0	2	0	0	0	0	27
Minneapolis.....	15	8	3	0	0	3	1	0	0	1	83
St. Paul.....	8	1	2	0	0	4	1	0	0	31	80
Iowa:											
Davenport.....	0	1	1	1	-----	-----	0	0	-----	0	-----
Sioux City.....	1	0	0	0	-----	-----	0	0	-----	2	-----
Waterloo.....	0	3	0	1	-----	-----	0	0	-----	0	-----

City reports for week ended July 7, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CEN- TRAL—contd.											
Missouri:											
Kansas City.....	2	8	0	1	0	6	0	3	0	8	112
St. Joseph.....	0	0	0	0	0	0	0	0	0	0	25
St. Louis.....	9	13	0	0	0	9	3	1	1	12	244
North Dakota:											
Fargo.....	0	3	0	0	0	0	0	0	0	3	10
Grand Forks.....		0	0	0			0	0		0	
South Dakota:											
Aberdeen.....	0		0	0			0	0		0	
Sioux Falls.....	0	2	0	0			0	0		0	
Nebraska:											
Lincoln.....	0	1	1	2	0	0	0	0	0	1	12
Omaha.....	1	3	2	2	0	1	0	0	0	0	58
Kansas:											
Topeka.....	0	3	0	2	0	0	1	0	0	7	11
Wichita.....	1	1	0	2	0	2	1	0	0	11	27
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	1	0	0	0	0	1	0	0	0	0	26
Maryland:											
Baltimore.....	10	6	0	0	0	13	4	0	0	113	190
Cumberland.....	0	0	0	0	0	2	0	0	0	0	13
Frederick.....	0	0	0	0	0	0	0	0	0	0	
District of Col.:											
Washington.....	7	20	0	0	0	13	2	0	0	11	139
Virginia:											
Lynchburg.....	0	1	0	0	0	1	0	1	0	4	10
Norfolk.....	0	0	1	0	0	2	1	0	0	0	
Richmond.....	1	3	0	0	0	0	1	0	0	0	37
Roanoke.....	0	0	0	0	0	1	0	0	0	0	10
West Virginia:											
Charleston.....	0	0	0	0	0	0	1	1	0	0	3
Wheeling.....	1	0	0	0	0	0	1	0	0	0	15
North Carolina:											
Raleigh.....	0	0	0	1	0	0	1	0	0	4	23
Wilmington.....	0	0	0	0	0	0	0	0	0	0	6
Winston-Salem.....	0	0	1	0	0	1	2	1	0	0	23
South Carolina:											
Charleston.....	0	1	0	1	0	3	1	1	0	0	18
Columbia.....	0	0	0	1	0	0	2	0	0	0	26
Greenville.....	0		0				0				
Georgia:											
Atlanta.....	2	3	3	1	0	3	3	2	0	1	68
Brunswick.....	0	0	0	0	0	0	0	1	0	0	4
Savannah.....	0	0	0	0	0	1	2	4	0	0	30
Florida:											
Miami.....	0	0	0	0	0	0	2	0	0	0	25
St. Petersburg.....	0	0	0	0	0	0	0	0	0	0	7
Tampa.....	1	0	0	0	0	3	1	0	1	1	21
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	0	1	0	0	0	1	0	0	0	0	25
Louisville.....	2	10	1	0	0	5	3	1	0	3	78
Tennessee:											
Memphis.....	1	1	0	0	0	6	5	1	2	3	68
Nashville.....	1	2	0	0	0	3	5	3	0	0	36
Alabama:											
Birmingham.....	1	0	1	1	0	8	3	2	2	5	85
Mobile.....	0	0	0	0	0	1	0	6	0	0	15
Montgomery.....	0		0				1				
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	2	0	0			0	0		1	
Little Rock.....	0	1	0	0	0	1	1	0	0	0	
Louisiana:											
New Orleans.....	1	0	1	0	0	9	3	9	1	4	137
Shreveport.....	0	0	1	0	0	2	1	0	0	0	35

City reports for week ended July 7, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CEN- TRAL—contd.											
Oklahoma:											
Oklahoma City	0	0	0	1	0	1	2	4	0	2	25
Tulsa	0	1	1	2			3	0		2	
Texas:											
Dallas	2	6	0	0	0	3	3	1	0	21	51
Fort Worth	1	3	1	1	0	2	1	1	0	0	45
Galveston	0	0	0	0	0	0	0	0	0	0	22
Houston	0	0	0	1	0	3	0	5	2	0	66
San Antonio	0	0	0	0	0	9	0	1	0	0	64
MOUNTAIN											
Montana:											
Billings	0	0	0	1	0	0	0	0	0	2	4
Great Falls	1	0	1	1	0	0	0	0	0	0	14
Helena	0	1	0	1	0	1	0	0	0	0	5
Missoula	0	0	0	0	0	1	0	1	0	0	4
Idaho:											
Boise	0	0	1	0	0	0	0	0	0	0	4
Colorado:											
Denver	6	1	0	0	0	6	1	0	0	24	76
Pueblo	0	0	0	0	0	0	1	0	0	0	14
New Mexico:											
Albuquerque	0	0	0	0	0	5	0	1	0	0	11
Utah:											
Salt Lake City	1	1	0	2	0	1	1	0	0	4	26
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	5
PACIFIC											
Washington:											
Seattle	5	2	2	3			0	1		6	
Spokane	2	0	3	0			0	0		0	
Tacoma	1	0	2	2	0	2	0	0	0	2	22
Oregon:											
Portland	3	1	7	17	0	5	0	0	0	0	67
California:											
Los Angeles	12	6	4	0	0	35	3	1	0	48	220
Sacramento	1	6	0	1	0	2	1	0	0	1	22
San Francisco	6	10	2	0	0	10	0	8	0	2	163

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	
NEW ENGLAND										
Massachusetts:										
Boston	2	1	0	0	0	1	0	1	0	
Connecticut:										
Hartford	0	0	0	0	0	0	0	1	0	
MIDDLE ATLANTIC										
New York:										
Buffalo	0	0	1	0	0	0	0	0	0	0
New York	10	10	0	0	0	0	3	1	0	0
New Jersey:										
Newark	0	0	0	0	0	0	0	1	0	0
Pennsylvania:										
Philadelphia	1	1	0	0	0	0	0	0	0	0
Pittsburgh	0	1	0	0	0	0	0	0	0	0

City reports for week ended July 7, 1928—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cleveland.....	2	2	2	0	0	0	0	0	0
Indiana:									
Indianapolis.....	0	2	0	0	0	0	0	0	0
Illinois:									
Chicago.....	4	5	1	1	0	0	1	0	0
Michigan:									
Detroit.....	2	3	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee.....	2	1	0	0	0	0	0	0	0
Racine.....	1	0	0	0	0	0	0	0	0
Superior.....	1	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis.....	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City.....	0	0	0	0	1	1	0	0	0
St. Louis.....	0	1	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore.....	0	0	1	2	0	0	0	2	0
District of Columbia:									
Washington.....	0	0	1	1	0	0	0	0	0
North Carolina:									
Winston-Salem.....	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	1	1	0	0	0
Georgia: ¹									
Atlanta.....	0	0	0	0	0	4	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Louisville.....	1	2	0	0	0	0	0	0	0
Tennessee:									
Memphis.....	0	0	2	0	0	2	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	1	1	0	0	0
Mobile.....	0	0	0	0	2	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock.....	0	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans.....	1	0	0	0	4	1	0	0	0
Shreveport.....	0	0	0	0	0	2	0	0	0
Texas:									
Dallas.....	0	0	0	0	0	0	0	1	0
Fort Worth.....	0	0	0	0	0	2	0	0	0
Houston.....	0	0	0	0	0	0	0	1	0
MOUNTAIN									
Colorado:									
Denver.....	0	1	0	0	0	0	0	0	0
Pueblo.....	0	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	2	0	0	0	0	0	0	0	0
Oregon:									
Portland.....	0	0	0	0	0	0	0	2	0
California:									
Los Angeles ²	0	0	0	0	1	0	0	1	0
Sacramento.....	0	0	0	0	1	1	0	0	0
San Francisco.....	0	0	0	0	0	1	0	0	0

¹ Typhus fever: 2 cases at Savannah, Ga., and 1 death at Tampa, Fla.² Rabies (in man): 1 death at Los Angeles, Calif.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended July 7, 1928, compared with those for a like period ended July 9, 1927. The population figures used in computing the rates are approximate estimates as of July 1, 1928 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 31,657,000 in 1928 and 31,050,000 in 1927. The 95 cities reporting deaths had nearly 30,961,000 estimated population in 1928 and nearly 30,370,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, June 3 to July 7, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927¹

DIPHTHERIA CASE RATES

	Week ended—									
	June 9, 1928	June 11, 1927	June 16, 1928	June 18, 1927	June 23, 1928	June 25, 1927	June 30, 1928	July 2, 1927	July 7, 1928	July 9, 1927
101 cities.....	134	* 161	* 145	150	117	161	* 114	140	* 87	121
New England.....	97	133	115	119	78	116	* 65	88	62	91
Middle Atlantic.....	220	247	242	216	185	269	186	212	147	196
East North Central.....	108	125	123	141	118	132	116	119	79	102
West North Central.....	53	81	71	79	62	46	53	59	29	38
South Atlantic.....	98	* 124	61	117	58	108	37	143	* 51	85
East South Central.....	20	20	* 29	41	25	35	10	20	* 16	41
West South Central.....	60	45	52	54	52	66	48	120	16	50
Mountain.....	35	368	44	206	35	152	* 18	126	37	108
Pacific.....	115	125	110	115	72	112	* 86	76	49	86

MEASLES CASE RATES

	1,023	* 425	* 858	360	653	301	* 498	271	* 823	198
101 cities.....										
New England.....	952	458	995	407	933	328	* 898	342	722	300
Middle Atlantic.....	1,767	298	1,399	281	1,102	247	653	300	455	154
East North Central.....	688	295	678	231	431	213	474	206	266	182
West North Central.....	594	372	556	247	341	216	382	204	171	93
South Atlantic.....	833	* 847	599	691	470	529	361	446	* 237	276
East South Central.....	763	157	* 458	132	449	132	150	81	* 68	76
West South Central.....	60	418	112	265	44	128	32	149	29	112
Mountain.....	734	565	681	341	336	448	* 406	493	354	134
Pacific.....	174	1,136	110	969	143	841	* 104	773	38	538

SCARLET FEVER CASE RATES

	199	* 240	* 166	198	143	189	* 105	128	* 74	99
101 cities.....										
New England.....	290	323	223	285	170	237	* 197	221	122	174
Middle Atlantic.....	100	286	162	223	146	222	100	148	58	123
East North Central.....	237	247	220	215	181	209	116	131	96	91
West North Central.....	177	194	161	162	138	158	113	89	90	91
South Atlantic.....	149	* 109	105	81	93	96	84	81	* 60	54
East South Central.....	259	60	* 80	71	85	81	65	56	* 73	46
West South Central.....	92	33	44	8	44	37	40	17	36	41
Mountain.....	106	717	71	663	27	439	* 72	287	27	117
Pacific.....	156	204	156	180	161	138	* 75	86	61	60

¹ The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1928, and 1927, respectively.

* Greenville, S. C., not included.

* Louisville, Ky., not included.

* Hartford, Conn., Helena, Mont., and San Francisco, Calif., not included.

* Greenville, S. C., and Montgomery, Ala., not included.

* Hartford, Conn., not included.

* Montgomery, Ala., not included.

* Helena, Mont., not included.

* San Francisco, Calif., not included.

Summary of weekly reports from cities, June 3 to July 7, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927—Continued.

SMALLPOX CASE RATES

	Week ended—									
	June 9, 1928	June 11, 1927	June 16, 1928	June 18, 1927	June 23, 1928	June 25, 1927	June 30, 1928	July 2, 1927	July 7, 1928	July 9, 1927
101 cities.....	11	20	10	19	7	16	10	18	6	18
New England.....	0	0	0	0	0	0	40	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	9	21	11	21	9	12	9	21	6	15
West North Central.....	21	32	24	30	23	57	31	38	16	34
South Atlantic.....	30	20	14	36	4	29	2	18	17	23
East South Central.....	25	106	58	56	20	56	16	35	15	61
West South Central.....	24	8	20	12	24	12	8	12	4	6
Mountain.....	71	27	44	54	9	90	144	63	44	45
Pacific.....	13	91	18	65	15	21	29	73	15	73

TYPHOID FEVER CASE RATES

	9	11	7	13	7	11	16	15	14	16
101 cities.....	9	11	7	13	7	11	16	15	14	16
New England.....	2	5	2	12	9	2	25	7	9	14
Middle Atlantic.....	10	6	2	6	1	4	8	6	9	8
East North Central.....	7	6	3	8	2	6	6	5	4	5
West North Central.....	4	14	4	6	4	6	12	8	8	10
South Atlantic.....	11	18	16	27	12	40	33	22	19	34
East South Central.....	10	41	44	81	40	61	100	132	108	162
West South Central.....	32	33	36	37	28	21	40	74	64	17
Mountain.....	9	0	9	18	0	18	27	9	9	18
Pacific.....	10	21	20	8	15	8	11	16	26	10

INFLUENZA DEATH RATES

	17	6	11	5	6	7	7	3	8	3
95 cities.....	17	6	11	5	6	7	7	3	8	3
New England.....	14	0	14	2	5	5	5	5	9	2
Middle Atlantic.....	19	5	11	5	9	6	6	2	10	4
East North Central.....	17	4	14	5	6	5	5	3	3	3
West North Central.....	14	4	4	2	0	10	8	2	8	0
South Atlantic.....	9	19	7	9	7	2	5	5	15	4
East South Central.....	52	11	31	5	5	27	37	0	21	16
West South Central.....	33	25	16	17	4	4	12	4	25	0
Mountain.....	0	9	9	9	0	27	18	9	18	0
Pacific.....	7	7	7	0	3	10	5	3	0	3

PNEUMONIA DEATH RATES

	126	93	111	87	85	74	75	73	70	59
95 cities.....	126	93	111	87	85	74	75	73	70	59
New England.....	168	88	136	107	90	86	67	60	51	60
Middle Atlantic.....	147	112	132	95	110	85	89	71	89	63
East North Central.....	115	93	111	86	69	71	63	80	67	49
West North Central.....	63	50	82	48	43	52	47	77	37	54
South Atlantic.....	130	64	77	60	93	45	72	56	57	36
East South Central.....	157	117	117	74	78	58	110	101	68	85
West South Central.....	107	102	74	93	86	42	70	72	57	64
Mountain.....	86	90	53	132	115	54	63	90	53	99
Pacific.....	81	83	88	100	84	131	103	69	78	55

¹ Greenville, S. C., not included.

² Louisville, Ky., not included.

³ Hartford, Conn., Helena, Mont., and San Francisco, Calif., not included.

⁴ Greenville, S. C., and Montgomery, Ala., not included.

⁵ Hartford, Conn., not included.

⁶ Montgomery, Ala., not included.

⁷ Helena, Mont., not included.

⁸ San Francisco, Calif., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1928 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1928	1927	1928	1927
Total	101	95	31,657,000	31,050,300	30,960,700	30,369,500
New England	12	12	2,274,400	2,242,700	2,274,400	2,242,700
Middle Atlantic	10	10	10,732,400	10,594,700	10,732,400	10,594,700
East North Central	16	16	7,991,400	7,820,700	7,991,400	7,820,700
West North Central	12	10	2,683,500	2,634,500	2,566,400	2,518,500
South Atlantic	21	21	2,981,900	2,890,700	2,981,900	2,890,700
East South Central	7	6	1,048,300	1,028,300	1,000,100	980,700
West South Central	8	7	1,307,600	1,260,700	1,274,100	1,227,800
Mountain	9	9	591,100	581,600	591,100	581,600
Pacific	6	4	2,046,400	1,996,400	1,548,900	1,512,100

FOREIGN AND INSULAR

SMALLPOX ON VESSEL

Nome, Alaska—June 17, 1928.—The steamship *Victoria* was reported at Nome, Alaska, June 17, 1928, with eight cases of smallpox aboard. The patients were landed and isolated contacts were vaccinated, and all possible precautions taken to prevent the spread of the disease.

On July 18, 1928, there was no case of smallpox in the immediate vicinity of Nome, but a case had been reported near Lost River Landing at the mouth of Rank River. A medical officer from the United States Coast Guard cutter *Northland* visited the case, vaccinated contacts, and left supplies.

CANADA

Provinces—Communicable diseases—Week ended June 30, 1928.—The Canadian Ministry of Health reports cases of certain communicable diseases from six Provinces of Canada for the week ended June 30, 1928, as follows:

	Nova Scotia	New Brunswick	Quebec	Mani- toba	Sas- katche- wan	Alberta	Total
Cerebrospinal fever.....				1			1
Influenza.....	20						20
Smallpox.....		6	40	2	9	3	12
Typhoid fever.....					1	8	9

EGYPT

Pilgrimage—Measures applied to returning pilgrims from Hedjaz.—No case of plague or cholera having been notified from Hedjaz, the Permanent Commission of the Maritime, Quarantine, and Sanitary Council of Egypt, under date of June 2, 1928, declared the 1,000 pilgrims disembarked at Tor, June 7, 1928, to be free from the diseases named. In view of the presence of smallpox in Hedjaz the commission decided to perform vaccination on all arriving persons not protected by recent vaccination. The usual medical visit, with disinfection of baggage at Tor and detention for observation not exceeding 72 hours, was ordered to be carried out.

JAMAICA

Smallpox (alastrim)—June 3-30, 1928.—During the four weeks ended June 30, 1928, smallpox, reported as alastrim, was notified in the Island of Jamaica as follows: At Kingston, reported for the week ended June 23, 2 cases; for the island outside of Kingston city and parish, 6 cases.

Cases of communicable diseases reported in Jamaica, four weeks ended June 30, 1928

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chicken pox.....	1	37	Poliomyelitis.....	1	1
Dysentery.....	7	12	Puerperal fever.....	16	57
Erysipelas.....	1	2	Tuberculosis.....	30	67
Leprosy.....	1		Typhoid fever.....		

Population: Kingston—62,707, census; Island of Jamaica—926,000, estimated.

PERU

Arequipa—Mortality—Prevailing diseases—May, 1928.—During the month of May, 1928, 83 deaths from all causes were reported at Arequipa, Peru, including diphtheria, 1; gastroenteritis, 4; influenza, 7; tuberculosis, 19; typhoid fever, 3.

PHILIPPINE ISLANDS

Manila—Cholera—July 9-14, 1928.—Under date of July 21, 1928, four cases of cholera were reported in and about Manila, Philippine Islands, July 9-14, 1928. Appropriate measures are being taken by the Philippine health authorities for the control of the disease.

Cebu—Cholera—July 25, 1928.—A suspected case of cholera was reported at the port of Cebu, Philippine Islands, July 25, 1928.

SYRIA

Beirut—Plague—July 11, 1928.—Plague was reported present at Beirut, Syria, July 11, 1928.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—													
	April, 1928				May, 1928				June, 1928					
	14	21	28	5	12	19	26	2	9	16	23	30		
Nov. 20–Dec. 17, 1927														
Dec. 18, 1927–Jan. 14, 1928														
Jan. 15–Feb. 11, 1928														
Feb. 12–Mar. 10, 1928														
Mar. 11–Apr. 7, 1928														
Kwangchow-Wan (see table below).														
Persian Gulf. ¹														
Philippine Islands: † Manila. ⁴														
Siam.	88	110	200	265	291	85	56	25						
	64	80	139	214	218	61	43	26	29	18				
Ayudhya.	3	21	101	60	60	30	24	17	14	11	8	3	1	
Bangkok.	2	11	66	36	33	13	14	6	9	7	4	2	2	
Trad.														
Straits Settlements: Singapore.	5	23	3		2		1					1		
On vessel:	4	12	1		2									
S. S. Hawaii Maru at Singapore from Saigon, French Indo-China.														
Indo-China (French) (see also table above):														
Annam.	3,179	370	267	23	36	14	18	23	17	11	18	4	26	13
Cambodia.	251	337	54	38	22	51	33	22	43	102	51	34	47	20
Cochin-China.	469	391	295	178	113	153	296	217	277	316	240	140	139	125
Laos.	246	77												
Tonkin.	1,297	3	1						1	4	1	9	1	16
Kwangchow-Wan.	16													8

¹ From July 19 to Dec. 26, 1927, 1,479 cases of cholera were reported in Iraq, with 1,063 deaths.

² A case of cholera was reported, July 19, on the island of Hengam, in the Persian Gulf.

³ A suspected case of cholera was reported at the port of Cebu, Philippine Islands, July 25, 1928.

⁴ A sporadic case of cholera were reported in and about Manila, Philippine Islands, July 9–14, 1928.

PLAGUE

Place		Week ended—											
		Nov. 17, 1927			Dec. 18, 1927-Jan. 14, 1928			Jan. 15-Feb. 11, 1928			Feb. 12-Mar. 10, 1928		
		Mar. 11-Apr. 7, 1928			Apr. 8-May 6, 1928			May 7-May 26, 1928			June 1-June 30, 1928		
		14	21	28	5	12	19	26	2	9	16	23	30
Algeria (see also table below):													
Algiers	C												
Oran	C												
Arabia: Aden	D												
Plague-infected rats													
Argentina:													
Avellaneda	C												
Bahia Blanca district	C												
Buenos Aires ¹	C												
Cordoba Province	C												
Entre Rios	C												
Firmit	C												
Loreto	C												
Quilino	C												
Rosario	C												
Santa Fe	C												
Santiago del Estero	C												
Sinrdi	C												
Ucacha	C												
Azores: St. Michaels Island	D												
Brazil:													
Bahia	C												
Porto Alegre	C												
Rio de Janeiro	D												
Plague-infected rats													
British East Africa (see also table below):													
Tanganyika	C												
Uganda	D												

¹ 6 cases of plague reported in Buenos Aires, Argentina, before May 14, 1928.
² 1 case of plague was reported at Rosario, Argentina, July 7, 1928.

On vessel:

S. S. Cadwallen, at La Plata, from Rosario,
Argentina..... C
S. S. Tymeric, at Barbados, from New Or-
leans..... C

! A case of plague was reported at Lisbon, Portugal, June 30, 1928.

: Two cases of plague were reported at Beirut, Syria, July 7, 1928.

: 8 cases of plague with 6 deaths were reported in Bengardane region, Tunisia, Mar. 17 to 27, 1928.

Place	Octo- ber- Decem- ber, 1927	Janu- ary, 1928	Feb- ruary, 1928	March, 1928	April, 1928	May, 1928	June, 1928
Algeria (see also table above):							
Algiers.....	C	2					
Angola.....	C	3					
British East Africa (see also table above):							
Kenya.....	C	62	26	24	19	17	11
Ecuador: Guayaquil.....	D	18	4	6	10	3	1
Plague-infected rats.	D	5	4	3	1		
Indo-China (see also table above):	C	31	23	31	21	9	16
Kwanchow-Wan.....	C	10	7			10	10
Madagascar:							
Ambohitra Province.....	D	692	427	342	171	95	65
Antidraibe Province.....	D	605	388	317	189	90	383
Itasy Province.....	D	25	103	67	30	25	23
Moramanga Province.....	D	17	96	66	29	25	26
Antidraibe Province.....	D	109	117	108	59	35	34
Itasy Province.....	D	108	117	108	54	34	31
Moramanga Province.....	D	104	33	19	3	1	
Madagascar—Continued.							
Tananarive Province.....	C						
Nigeria (see also table above):	D						
Peru.....	D						
Callao.....	D						
Lima.....	D						
Senegal (see also table above):	D						
Rufisque.....	D						
Thies.....	D						
Tioutane.....	D						
Syria: Beirut (see also table above):	C						

PLAGUE RATS ON VESSELS

S. S. Modeml at Goteborg, Sweden, from Bahia and Buenos Aires via Cape Verde Islands, December 22, 1927.

S. S. Gudeore at Landskrona, Sweden, from Rosario via Canary Islands, January 22, 1928.

S. S. Dryden at Liverpool from La Plata River ports, January 20, 1928.

S. S. Sicily at Liverpool from Buenos Aires and Rosario, June 8, 1928, 7 plague-infected rats.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place	Week ended—											
	April, 1928				May, 1928				June, 1928			
	14	21	28	5	12	19	26	2	9	16	23	30
Algeria (see also table below).....	C	12	3	72	3	1	3		1	7		
Algiers.....	C	2	5	10	2	1						
Oran.....	C	3	12	5	11	4				4		
Angola (see table below).....	C		1									
Arabia: Aden.....	C											
Brazil (see also table below):												
Rio de Janeiro.....	D		1									
British East Africa (see also table below):												
Kenya—Mombasa.....	D		2		1							
Tanganyika.....	D											
British South Africa:												
Northern Rhodesia.....	C	26	67	297	4	591	5	3	148			
Southern Rhodesia.....	D	1	1	42	1	48	1	1	14			
Canada:												
Alberta.....	C	10	11	27	10	47	3	3	13	10	18	1
Calgary.....	C							1	4	1		3
Edmonton.....	C	8	5	3	13	20	1	12	10			
British Columbia—Vancouver.....	C	4	8	26	10	17	6	6	4	2	5	2
Manitoba.....	C	7	11	1				7	1	3		
Winnipeg.....	C	2	2	2						10		
New Brunswick.....	C	2	1									
Ontario.....	C	347	212	243	147	83	6	18	15	12	6	7
Hamilton.....	C	2						8	5	8	14	
Kingston.....	C	1		1				1				
Ottawa.....	C	63	60	68	22	26	3	1	4	2		
Toronto.....	C	39	28	20	14	9	4	4	1	2	7	
Quebec.....	C	16	44	26	54	112	21	25	4	33	13	3
Montreal.....	C	8	8	9	9	9	2	1	15	10	14	32
Quebec.....	C	4	10	16	13	10	3	7	7	17	9	10
Sherbrooke.....	C							5	8	14	17	4
Saskatchewan.....	C	58	52	97	22	33	2	23	15	12	3	3
Moose Jaw.....	C	1	4	11	13	7	3	1		4	4	9

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CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—															
	April, 1928				May, 1928				June, 1928							
	14	21	28		5	12	19	26	2	9	16	23	30			
Great Britain—Continued																
England and Wales—Continued.																
Leeds.....	16	11	3	14	1	1				3	4	1				
Liverpool.....		1		17	3	27	5	10	5	5	2A	11				
London.....		5	4	16	2	4	1	1	2	1						
Manchester.....	25	25	25	12			1	6	3	2	1					
Newcastle upon Tyne.....	55	22	27	11	4	4	5	10	2	5	2					
Nottingham.....		13	27	11	4	6	3	2	2	2	1					
Sheffield.....	9	14	8	0	4	10	2	2	2	1						
Stoke on Trent.....		4	1	15	4	10	5	8	6	1	2	7				
Greece (see table below).			35	115						6	3	11				
India.....			23	46						2		1				
Basseln.....	6,731	10,676	17,777	28,034	8,368	8,038	7,368	6,558	5,978							
Bombay.....	1,650	2,429	3,709	3,826	1,988	1,739	1,601	1,341	1,358							
Calcutta.....	9	14	61	149	56	57	54	43	37	26	18	20	17			
Kanabi.....	2	24	24	73	32	34	27	23	25	13	15	8	22	11		
Madras.....	25	36	71	134	49	51	31	40	41	29	31	29	22	23	16	
Moulmein.....	11	27	34	50	104	52	42	35	30	26	23	22	16	20	14	
Nagapatam.....			1	1				2								
Rangoon.....	11	21	74	100	49	36	60	24	17	22	11	9	6	7	13	
Tuticorin.....	3	6	8	19	16	8	7	7	5	5	3	1	2	4		
Vizagapatam.....																
India (French):																
Chandernagor.....			8	3				1	3	4	1					
Pondicherry.....	41	65	47	9	18	12	15	9	16	7	9	6	3	2	2	
	41	50	47	9	18	12	15	9	16	7	9	6	3	2	2	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place	Week ended—																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	Sept. 25- Oct. 22, 1927	Oct. 23- Nov. 19, 1927	Nov. 20- Dec. 17, 1927	Dec. 18, 1927- Jan. 14, 1928	Jan. 15- Feb. 11, 1928	Feb. 12- Mar. 10, 1928	April, 1928								May, 1928				June, 1928																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
							Mar. 11- Apr. 7, 1928		14	21	28	5	12	19	26	2	9	16	23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Algeria (see also table below):																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	1927		January, 1928		February, 1928		March, 1928		April, 1928		May 1-10, 1928
	July- Sep- tember	October- November	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-30
Algeria (see also table above).....	C	110	12								
Algiers.....	D	13	1								
Bulgaria (see also table above).....	C	10	2								
	C	43	4	7	6	8	12	6			26
	D	3	2	1	1	1	2	2			
Morocco (see also table above).....	C	231	123								

Place	July- Sep- tember, 1927	October- De- cember, 1927	Janu- ary, 1928	Febru- ary, 1928	March, 1928	April, 1928	May, 1928	Place	July- Sep- tember, 1927	Octo- ber- De- cember, 1927	Janu- ary, 1928	Febru- ary, 1928	March, 1928	April, 1928	May, 1928
China (see also table above):															
Shanghai.....	D	90	1	313	241			Mexico (see also table above).....	D	64	98				
Chosen.....	D	8	80	400	32			Peru:	D	3	3			1	
Chemulpo.....	D	3	6	44	25			Arequipa.....	C		2				
Gensan.....	D	2	1	1	1			La Oroya.....	C		P				
	D		1	1				Lima.....	C	8					
Seoul.....	D	5	2	10	28			Turkey.....	C			17			
	D	1	1	1	2			Union of Soviet Socialist Re-	D			1			
Czechoslovakia.....	D	12	7	25	13			publics:							
Greece: Athens.....	D	3	1	2	2			Railways, etc.....	C	77	102	41	107		
	D				11			Transcaucasus, Siberia, and							
Japan.....	D	1	1		2			Central Asia.....	C	208	190	7			
Latvia.....	D	6			21			Ukraine.....	C	265	631	833	459		
Lithuania.....	D	60	54	26	4			Other territories in Europe.....	C	1,839	1,924	1,853			
	D	14	3	10	1			Yugoslavia.....	C	7	24	3	10	19	3
				5	3				D	5	3	3	3	1	3

